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EXPLAINING, BEFORE A MIRROR, THE POSITIONS AND MOVEMENTS CORRESPONDING TO THE PHONETIC ELEMENTS. FROM BOUDIN'S "LA SURDITÉ"

LIP-READING AS A REMEDY FOR DEAFNESS

A REVIEW OF BOUDIN'S WORK BY SUSANNA E. HULL

La Surdité Moyen d'y remedier par La Lecture sur les levres, Faculte que les sourds peuvent acquerir de comprendre la parole aux mouvements des levres. By Etienne Boudin, Professeur a l'Institut national des sourds-muets de Paris.

DR. VERGNIAUD in his admirable preface draws attention to the fact that notwithstanding the giant strides made by medical science in the special study of disease affecting the throat, nose, and ears, there yet remain many cases of incurable deafness and of defects of speech beyond the power of medical skill to alleviate. He then bears eloquent testimony to the scientific practise in the institutions for the deaf, where the professors have worked out and applied, with a skill that appears almost miraculous, methods of orthophony for giving speech to the deaf, and of lip-reading by which, to a practical extent, sight is made to take the place of hearing, both methods being based on an exhaustive study of the mechanism of speech and the principles underlying language.

In indicating the professor of instruction for the deaf as one who is ready equipped by knowledge and practise to give to the deaf beyond medical aid a means of replacing their lost faculty of hearing by the adoption of lip-reading, Dr. Vergniaud refers to Mrs. Graham Bell's celebrated power to engage, by its means, in conversation on any subject, scientific or social. He then touches on Dr. A. Graham Bell having been led to the invention of the telephone while making experiments in connection with his work for the deaf in the Boston School, and shows that the more recent production of the cinematograph was also due to collaboration between its inventor, M.

USING TOUCH AS AN AID. FROM BOUDIN'S "LA SURDITÉ"

Marey, and one of the professors of the Paris National Institution for the deaf, M. Marichelle. By the phonoscope, the primary instrument employed, deaf pupils trained in lip-reading were without difficulty able to read the lips of an animated portrait formed by successive photographs taken during the act of speaking. From this beginning sprang the cinematograph, with its living pictures of today.

Turning to his fellow-members of the Oto-Laryngological Society and French aurists in general, Dr. Vergniaud urges upon them their great responsibility to make known to parents and guardians that these means of supplementing lost hearing and overcoming defects of speech by lip-reading and orthophony exist, and urges them to open to their patients the door of hope and restored social happiness by directing them to apply for and carry out the needed instruction. Such advice Dr. Vergniaud has long given himself, but has failed hitherto to gain attention on the part of his patients, through the lack, as he believes, of a manual giving the needful information in a clear and concise manner. This he trusts the work of E. Boudin's will now supply. It is for this reason he has placed the subject he deems so important before the public, and desires to see this manual in the hands of all French otologists and intelligent deaf persons.

CHAPTER I.

The first chapter deals with general considerations regarding deafness. Its best alleviation is shown to be lip-reading. M. Boudin points out that deafness is not a modern condition; it is an infirmity that has always existed. But the research and scientific study of today has found something capable of removing the profound depression too often produced by the social isolation caused by deafness.

The great advances and successes gained in the practise of oto-rhino-laryngology make it imperative that those threatened with deafness should first apply to specialists of that science for assistance; but, when that fails, they are warned not to have recourse to the charlatanism that produces instruments guaranteed to cure all deafness. No doubt there are instruments that give help in cases of partial deafness, but for the great majority the best and only dependable relief is instruction in lip-reading. Lip-reading consists of two operations—one physical, taking note as it does of the visible movements of the lips and the play of the countenance during speech; the other psychical, since it interprets by mental adaptation the words and syllables deciphered, so as to correctly convey the thought expressed by the speaker. Based on an analysis of the movements seen during speech, lip-reading thus transfers to the eye the faculty to convey thought through language—a function the ear has ceased to perform. This transference of faculty from one sense to another is a natural and instinctive effort by which communication with the outer world is preserved when the function of any sense is lost, or needs to be supplemented. Examples are seen in the well-known sensitiveness of touch possessed by blind persons, the keen power of hearing induced by use in the telegraphist, and similar cases. Sight, the most precious of the senses and the most easily trained, is peculiarly adapted to such culture. This is not by way of compensation, as some suppose, but as the result of *use*. The deaf readily become keen

STUDYING TENSION AND MUSCULAR PRESSURE. FROM BOUDIN'S "LA SURDITÉ"

observers and many have even acquired the power to lip-read without a teacher.

History shows lip-reading to have been long ago practised in individual cases, and modern instances prove its wide success. That it is so little practised in France is probably due to its sharing with other sciences, no matter how well established, the unreasoning discredit of a certain portion of the public; and, as well as this, that the number of trained lip-readers in France is as yet relatively small. Lip-reading is not an art confined to individual cases; neither is it a privilege of the few. It is a faculty that can be developed in all deaf persons, whatever their age, social position, or degree of education, so long as they have an intelligent grasp of the language they have daily employed hitherto.

CHAPTER II

This chapter explains the difference between the alphabet of grammar and that of phonetics—*i. e.*, the alphabet of sounds—and details the movements and positions of the vocal organs which produce these sounds in molding the emissions of breath and voice. It also shows the relations that exist between the phonetic positions and the facial appearances that are produced in assuming those positions. Pictorial illustrations are added to the descriptions of the formation and appearances of the various carefully tabulated *vowels* and *consonants.*

In concluding the chapter M. Boudin points to the analogy between the well-known animated pictures produced by instantaneously taken photographs rapidly presented by the cinematograph and the similarly rapidly presented facial appearances on which the lip-reader depends. He draws the conclusion that just as trained lip-readers could decipher the words and phrases spoken from an animated portrait of a person speaking, so can the lip-reader gather conversation from the lips of those who speak to him. He goes on to answer an objection that might be made in comparing these photographic representations with the power of the eye to register and convey to the brain with sufficient rapidity the extremely minute and fugitive movements of speech read from the lips. He says: "It is undeniable that the eye as an organ for registering the movements of the mouth is inferior to the photographic apparatus, but this inferiority is made up for, not only by the play of the physiognomy that greatly augments the value of the mouth appearances, but also and still further by *the faculty of elucidation* which mentally seconds the sight and gives definite meaning to the verbal expression evoked by the labial positions corresponding to syllables, words, and phrases, though of these but mere fragments may have been gathered."

This faculty of mental elucidation—the mental *supplying of "missing links,"* which cooperates with the sight in lip-reading, and without which the art would be impossible—is, M. Boudin remarks, by no means easy to define. It is that faculty by which the mind grasps with accuracy ideas that have been more or less vaguely evoked by a confused or insufficient sense impression. By this faculty one skilled in reading manuscripts can, with scarcely any difficulty, decipher a handwriting that to others appears the merest hieroglyphics. By the same faculty another will unhesitatingly catch the meaning of some utterance of which his ear has caught the vaguest impression, whether this be due to the defective pronunciation or distant position of the speaker,

STUDYING THE PLAY OF THE FEATURES BY COVERING THE MOUTH, SO THAT THE MOVEMENTS OF THE LIPS AND TONGUE CANNOT BE SEEN. FROM BOUDIN'S "LA SURDITÉ"

or to a defect in his own hearing. Again, it is by this faculty that we conceive immediately and as a whole the appearance of some object or some scene of which but a partial glimpse has come under observation. Our intelligence is therefore greatly dependent on this faculty, and whether it concerns deciphering handwriting, hearing articulate sounds, seeing objects, or lip-reading words, its intervention springs less from will-power or reflection than from habit; but it is to its sway that the mind owes its power to interpret with confidence from vague or confused sense impressions.

From the preceding remarks we perceive that lip-reading rests upon mental and physical gifts and observations. There is nothing in it that is specious or artificial. Of all the means recommended to aid the deaf, when medical skill has failed them, lip-reading is the one that has been most widely studied, is most scientific, most rational, and the most efficacious.

Chapter III

This chapter deals with the conditions on which *success* in lip-reading depends. Obviously, since the eye is called upon to replace the ear as well as to fulfill its own functions, good sight and good light are essentials; but these secured, lip-reading is possible to all the deaf. And yet absolute success depends not only on good sight, a good method, a skilled teacher, but above and before all on the learner's own disposition. Paradoxical as the statement may appear, the truth remains that its acquisition is due to a felt need, sustained by a firm determination and a conviction that the desired end will be gained. The essential and primary condition of success is the learner's own *will to succeed*. Unless this exists, no really satisfactory results can be looked for. The time to commence lip-reading is the moment that deafness is pronounced incurable. The desire for continued social intercourse is then strong and the mind has not been depressed by a sense of isolation. The teacher of lip-reading must know how to instil courage and perseverance and to give interest to the work. No form of instruction depends more for success upon the character, judgment, and personal qualities of the teacher. Lip-reading, being based on a labial alphabet that is of necessity fragmentary and imperfect, cannot be *analytic* in practise. We must fall back upon *synthetic* reading, aided by the mind's power of elucidation, already explained. This is a habit very readily grasped and applied by the deaf. A thorough grounding in analytic reading of phonetic appearances is, however, essential for the learner and an exhaustive knowledge of the mechanism of speech for the teacher. Expedients for perfecting the instruction given, such as the use of a looking-glass, appeal to the sense of touch to confirm the sight, and so on, conclude the chapter.

Chapter IV

Space and the difference of the language dealt with forbid our reproducing in detail the carefully arranged practical exercises for the attainment of French lip-reading which occupy the fourth chapter. These are conveyed by dictation, first of simple sounds, syllables, words, phrases, and combinations of these, proceeding to little anecdotes and simple conversation. The various exercises are taken

simultaneously, not consecutively; that is to say, certain simple *elements* are first mastered and combined into syllables, words, etc., before another set are dealt with, so as to give the learner the confidence and interest born of conquest so far. The importance of abstract exercises dealing with syllables devoid of meaning is shown; these train the eye to gather from the mouth itself by analysis the positions and movements and their appearances.

APPENDIX

In the appendix M. Boudin points out the high value of lip-reading and its companion science of orthophony, or the teaching of articulation, for relieving the defects in both hearing and speech in the numerous cases that medical inspection has discovered among school children. By placing these children under the instruction of teachers trained in these arts, hundreds might be restored to happiness and become self-supporting citizens who now, through lack of the remedy needed, remain intellectually undeveloped in childhood, to become a burden on the state in adult life.

The book here reviewed should do much in France to forward this beneficent work if placed in the hands of parents, guardians, medical practitioners, head-masters, and others interested in school hygiene.

HOW WE GROW DEAF—COLDS AND THEIR CONSEQUENCES*

BY WOODS HUTCHINSON, A. M., M. D.

SOME men are born deaf, some achieve deafness, and some have deafness thrust upon them. Broadly considered, the second class is far the largest of the three. We still take too many of our calamities lying down and fail to fight hard enough against our fate—not that we were much to blame for our fatalistic attitude toward deafness up to, say, a quarter of a century ago. Not only had we been taught from time immemorial to regard the dulling of the delicate sense of hearing as one of the inevitable penalties of advancing years, but the cure of deafness, after it has once been achieved was—and, alas, is yet—one of the discredits—even disgraces—of medicine.

Even today the doctor is not very hopeful of curing deafness in the sense of restoring hearing which has been lost for any considerable length of time; but his attitude toward the condition has been completely revolutionized by the discovery that deafness does not come by chance or by some inevitable process of nature, but is due to definite and well-recognized causes, three-fourths of which are preventable. The great majority of cases, even of chronic and established deafness, can be prevented from getting any worse and usually improved a little, while nine-tenths of all cases can be prevented entirely, either by avoiding their causes or by taking them in hand as soon as the first sign of trouble with the hearing is noticed.

WHOM THE GODS WOULD FAIN DESTROY THEY FIRST MAKE SNEEZE

By the mercy of Heaven, the first attack of deafness is never permanent, with a few rare exceptions involving the nerve of hearing itself. The calamity gives fair warning of its approach—whom the gods would fain destroy they first make sneeze. Our hearing is lost, not all at once, or even half or a quarter at once, but by tiny successive fractions, each due to a fresh attack of the disease which causes deafness. And that disease, nine times out of ten, is nothing more formidable than our old friend, or rather most intimate enemy, a common cold, which travels up the tube to the ear from the nose or throat.

The motto of our crusade against deafness emphatically is: "Despise not the day of small things." The only way to cure deafness is to treat it before it reaches the ears. To fuss over the tympanum after you have neglected the throat is literally "to keep the promise to our ear, and break it to our hope"—to try to put out the fire after it has reached the powder magazine. The chief warning to remember in treating and getting rid of colds and catarrhs is that all roads lead to the ear, especially in the later stages of the attack; that every little influenza germ, whose motto is Excelsior! climbs the Eustachian tube to the ear, and that every effort on the part of the invader to reach "the man higher up" lands him on the eardrum. *Take care of the nose and the ear will take care of itself.*

It is curious what picturesquely distorted notions prevail about the causation of even such common and frequent misfortunes as deafness and blindness. Both have formed "high lights" in the classic picture of old age since the very dawn of history. The explanation was as simple as it was plausible and poetic. The dull hearing and dimming vision were due merely to the gradual wearing away and blunting of the keen edge of all the senses and powers of the body under the successive shocks of years and the wear and tear of life.

The auditory nerve was supposed to have been hammered and pounded, as it were, into a sort of stupor—the retina dazzled and flashed

*From the *Saturday Evening Post*, Philadelphia, March 23, 1912.

into a dazed condition where it could no longer respond to the rays of light. Deafness and the clouded vision of the old man were merely a part of the general scheme of decay—"sans hair, sans teeth, sans everything."

Nothing could sound more reasonable and altogether in accordance with what was to be expected. So long as we were satisfied to accept statements of how things were ordained to be, or inevitably must be, instead of taking the trouble to find out what they actually were, this was a perfectly good explanation, and it has been embalmed in the literature of all the ages; but the moment we began to ask uncomfortable questions and to insist on finding out the facts, a totally different condition of affairs was discovered to exist.

Barely half a century ago, for instance, it was found that two-thirds of the failing vision of old age was due not to any dulling of the retina or optic nerve, or dimming of the transparent parts of the eye, but merely to the failure of the little circular muscle within the eyeball, so that the eye could no longer adjust or accommodate itself to the light rays. Practically perfect vision, keen and sharp, though of course more readily tiring than before, could be restored by fitting the proper "specs"—that is, placing a glass or a lens before the eye to make good the failure of this muscle to act.

Half the remainder of the blurred vision of advancing years was found to be due to changes in the lens of the eye known as cataract; and when the clouded lens was removed by a simple surgical operation, and a new clear lens of glass hung in front of the eye in its place, the retina was found to be as clear and sharp as ever. In short, the retina and the optic nerve of the old man of seventy were found to be practically as keen and as responsive to the light as they had been at seventeen; and a full third of the discomforts of old age were relieved at a stroke.

SAFETY VALVE THE CHIEF CAUSE OF TROUBLE

The same thing has been found in regard to the dull ear of old age in even higher degree. Not more than a fraction of a per cent of the deafness of old age is due to changes in the nerve of hearing. In other words, the hearing of the grandfather is at bottom as keen as that of his grandchild if only the sound waves can actually reach the keyboard of his nerve. In the economic jargon of the day, it is the "middleman" who is at fault—the conducting apparatus that lies between the sound waves and the organ of hearing, known from that fact as the middle ear—that is really deaf. Nine times out of ten, when you say a man is deaf you mean that his eardrum and its piano-hammer attachments are out of order.

Our hearing machine, though distressingly complicated in its details, is exceedingly simple in principle. Briefly, it consists of three parts, with a safety-valve attachment to one of them, known simply from their positions as the outer or external ear, the middle ear, and the internal ear. The safety valve is the joker that gives rise to nearly all the trouble. The division of labor between these three parts is matter-of-fact and rational. The outer ear, as plainly follows from its position and shape, is merely a horn or funnel for catching the sound waves and conveying them into the interior of the head, where the middle ear lies warm, sheltered and out of harm's way. The outer ear is really of the most trifling importance—little more than a hole leading down to the drum, with a more or less movable flap over its opening. The sole value of the flap today is an ornament—and it is not exactly a howling success at that in some of us.

The middle ear is, in principle, equally simple and matter-of-fact. It consists merely of a tightly stretched disk or drum of skin, with a cavity in the bone behind it to allow it to vibrate. Across this cavity runs a chain of exceedingly delicate little bones, which transmit the vibrations to the internal ear or organ of hearing proper.

THE INTERNAL EAR

This internal ear is vastly more complicated; but, as it luckily seldom becomes diseased—and when it does we do not know what under Heaven to do for it, and have no remedy that will reach it—its makeup is of little practical importance. We may here dismiss it with the statement that it consists of a singular little keyboard about an inch and a quarter long, coiled up like a snail shell—*cochlea*—made up of tiny rods laid side by side, not unlike the keys of a pianoforte.

The delicacy and elaborate perfection of the whole may be gathered from the fact that in its inch-and-a-quarter length there are five thousand separate rods or keys. Each of these keys is believed—though this is largely hypothesis—to vibrate in response to some tone or shade of tone that can be heard by the human ear; and their vibrations are conducted to the tiny twigs of the auditory nerve, which run along the under side of the keyboard and then unite into a small twisted cable, to pass to the brain.

Each key is supposed to pick out its particular note by vibrating in response to it, much as the receiving apparatus of a wireless telegraph responds to or catches the particular vibration to which it is tuned. It is probable that here is the site of those extraordinary differences in tone perception that exist between us, ranging from the born musical ear, with its delicate appreciation of the subtlest harmonies, down to inability to distinguish Old Hundred from Yankee Doodle.

Not a little of the painful and laborious process known as "musical training"—laborious for the pupil and painful for the neighbors—consists in limbering up and drilling the keys of this internal piano. They are taught to work separately from one another, so that the

slightest deviation in tone, known as flatting or sharping, can be accurately distinguished; and also they may be given such simple and rudimentary training in arithmetic as will enable them to recognize when any note is struck which has two, three, or five times the number of vibrations of their own particular note, and to respond promptly thereto. This response to simple multiples or vulgar fractions of their own tone forms the basis of what we call harmony. In that last survival of the torture chamber of the Middle Ages—five-finger exercises—you are training not merely your stiff and unwilling fingers, but the keys of this piano—a piano whose keyboard is coiled in your own head, or should be, but which often, so far as possibility of effective training is concerned, exists only—in the vernacular of the day—"in your mind."

A TELEPHONE TRANSMITTER

The three parts of the hearing machine will thus be seen roughly to correspond to the parts of the transmitter of a telephone. The projecting mouthpiece is the external ear and the hole leading down to the drum; the diaphragm is the drum, and the little chain of bones behind it is the armature, which changes the vibrations of the diaphragm into alternating electric currents; and the auditory nerve is the wire that transmits the message to "central."

It is well to have this general idea of the gearing of our hearing machine, both because the three divisions of it play widely different parts in the production of deafness, and also because the practical importance of the parts they play could almost be inferred from their position.

The outer ear, being little more than a hole through which the sound waves can reach the drum in its place of shelter and safety an inch and a quarter below the surface of the head, plays almost no part at all in the production of deafness; in fact, the only way in which disturbances of this part of the ear could interfere with hearing would be by blocking or plugging it up completely—which, in the nature of the case, very seldom happens. Only two such accidents are known—tumors and accumulations of wax.

The other end of the apparatus—the internal ear—is so deeply imbedded and buried within the bones of the head, so completely protected from all possibility of exposure to attack, that it is literally one of the "safest" structures in the body; in fact, the only dangerous enemies of the keyboard and auditory nerve are the toxins of a few infectious diseases, which have a special power of singling out and attacking the brain and nervous system. For practical purposes these may be really reduced to two—one fortunately rare; the other more common—cerebro-spinal meningitis and blood taint. Could these two diseases be wiped out—and they are both preventable and one day will be prevented when we become intelligent enough—we should practically get rid of all deafness due to diseases of the keyboard and nerve of hearing, known as nerve deafness.

THE WEAK LINK IN OUR CHAIN OF HEARING

This leaves the middle ear, or drum cavity and its attachments, as the weak link in our chain of hearing, the region in which nearly nine-tenths of all cases and forms of deafness occur. The particular Ethiopian in our middle-ear woodpile, however, is that wretched little tube connecting the drum cavity with the throat, called the Eustachian tube, after the fine old father of anatomy who first discovered and described it. It might almost be called the deafness tube, for it is literally the leak that lets in the flood—the underground passage through which our germ enemies can crawl and worm their way into the very citadel of our fortress of hearing. Then, once they have effected an entrance, they block up the passage that admitted them and proceed to be fruitful and multiply, torturing the defenseless drum and the delicate lining of the drum cavity until they weep literal tears of agonized exudation and pus, thus raising the pressure in that tiny prison until every little nerve twig in it, trapped and jammed against its bony walls, shrieks in agony. Then we say that we have an attack of earache.

If the enemy be sufficiently numerous and vicious the tension will continue to rise in the drum cavity, and the pain will become more excruciating until the bacillus bomb literally explodes, either by rupture through the drum and discharging a gush of "matter" from the outer ear, or by blowing out the débris with which it had obstructed the Eustachian tube behind itself and pouring back harmlessly into the throat.

Though this is the most painful and furious form of attack upon the middle ear, it is neither the commonest nor the most dangerous. Contrary to popular impression, bursting or perforation of the drum is not a dangerous accident, nor is it often followed by permanent deafness or even serious dullness of hearing. Every time there is a discharge from the ear in childhood, this process has occurred; yet, as every one knows, not more than one case in fifty of "running from the ear" is followed by permanent deafness. Instead of it being difficult to heal up the opening in the drum, our greatest trouble is to keep it open long enough to allow complete emptying of the cavity and clearing up of the inflammation within. Just as soon as the discharge ceases, the hole in the drum heals up completely, leaving only a slight scar, and the hearing quickly becomes as good as ever. A puncture of the drum will heal as readily as a cut or scratch on the skin and leave no discoverable scar. So there is no need to fear deafness for life

because there has been an explosive or a "relief" perforation of the drum.

This is not by any means to say that rupture of the eardrum is a mere trifle. It is anything but that. The hole made may be large and ragged enough to leave the drum permanently distorted and tied down by the scar, so that it will never vibrate properly afterward. Moreover, on account of the fact that the drum cavity is separated from the brain by only the thinnest plate of bone, the inflammation may push inward, so to speak, instead of bursting outward, and cause a serious meningitis or brain abscess; or the inflammation may spread to certain cavities in the skull just behind the ear—known as the mastoid cells—and set up the now famous mastoid abscess, which also threatens the brain. So that the only safe thing to do in cases of severe earache, whenever the inflammation has gone above a certain height and refuses to yield within a few hours to warm douchings and other local treatment of that sort, is to call in the ear specialist and puncture the drum with a delicate knife-pointed needle, so as to allow the matter or pus to escape harmlessly into the outer ear.

Pus in the drum cavity is literally between the layers of the bones of the skull and may leak upward or inward into the brain or backward into the mastoid quite readily. Usually it works into the large spongy cavity in the mastoid—the bump behind the ear, phrenologically known as "the bump of destructiveness"—and there gathers force for its attack on the brain. So that the moment the bump behind the ear begins to swell or redden, or become tender to pressure, it is time to call a surgeon. Then trephining or chiselling down through the bone to the hollow where the pus is will let it out and save the brain from attack. This is a serious operation, but better than a brain abscess.

HOW WE USUALLY GROW DEAF

The middle-ear attack, which most commonly leads to deafness, is the one which produces little more than that sensation of fullness in the ears and woodenness or dullness in the head which so frequently follows an attack of sore throat or influenza. Here the germs are fewer in number or less vicious in temper, and do not make themselves so disagreeable as to stir up an inflammatory revolt of sufficient violence to "fire them out" bodily. They succeed in establishing either a permanent foothold or in setting up a slow, thickening, fibrous inflammation of the drum and of the mucous membrane covering the tiny chain of bones.

The temporary excitement which their first arrival caused subsides. The dull, stuffed feeling in your ears disappears after a few days or perhaps a week or two. You think you are as well again as ever; but if you were to test yourself with a watch or tuning fork, you would find you had lost a couple of inches of the distance at which you could hear it. Another cold is caught a few months or years later and fresh reënforcements are added to the hostile forces at work in your drum cavity. A sharper attack of stuffiness and temporary deafness follows, and when that subsides you have again lost a few more inches of your range of hearing. And so you slip gradually down the incline toward the pit of deafness, until finally, by the fifth, tenth, or fifteenth attack, you have lost enough of the "margin" of your hearing to begin to make it difficult for you to hear ordinary conversation. Then you suddenly discover and announce to your friends that you must be growing deaf.

Then it is too late to do much more than save such hearing as you possess and stop the process from going farther.

Just avoid common colds as completely as you possibly can; attack them vigorously, with the assistance of the best expert advice that you can secure whenever they do occur. Be particularly careful that they are cleared up as promptly and as cleanly as possible, and not allowed to hang on for weeks or months at a stretch. Consult your family physician or a competent nose-and-throat doctor whenever any stuffiness in the ears or dullness of hearing lasts for more than three days, and you will escape at least two-thirds of all your risks of becoming deaf, no matter to what age you may live. The main reason why deafness is so much more common in later life than it is in childhood or young life is that there have been so many more years to catch colds in.

CLIMBING THE EUSTACHIAN TUBE

Almost any infection that begins in or involves the nose and throat may also climb the Eustachian tube and attack the drum. Measles and whooping-cough, for instance, quite frequently do so, and pneumonia and the more violent types of epidemic influenza less frequently, but with a peculiar deadliness, producing furious earache, with almost certain perforation of the drum and great danger of spreading to the mastoid.

There is one infectious disease, however, that seems to have a special fondness for attacking the eardrum—so much so that it is probably the commonest single cause of chronic running from the ear—and that is scarlet fever; in fact, the two most important points to watch during the attack of this scourge of childhood are the ear in the first week of the fever and the kidneys in the later stages. Fortunately the same method will tend to prevent ear trouble in all of these fevers, namely, thorough and careful antiseptic treatment of the nose and throat by means of sprays and washes such as are advised in the treatment of an ordinary cold, only somewhat more strongly antiseptic or germicidal. Care in this respect will reduce the risks of ear trouble, even in scarlet fever, to a minimum.

It is always well for the intelligent mother

to be carefully on the lookout for earache in all the little fevers of childhood, including colds and tonsilitis, especially in children who are too young to tell or even clearly indicate with their little hands where the pain is situated. Successive attacks of loud and prolonged crying or screaming without ascertainable cause in a baby or young child that is feverish, particularly if the little one rubs the side of its head or burrows its head deeply and restlessly into the pillow, should always rouse suspicion of earache and call for expert advice.

ADENOIDS

Though colds or sore throats will cause earache or middle-ear disease in the adult directly, in children they more commonly do so indirectly by setting up that inflamed and suppurating condition of the roof of the throat now famous as adenoids. An adenoid child, with this pile of tinder at the very mouth of his Eustachian tube ready to flare up at the slightest spark of cold or chill, lives perpetually upon the brink of deafness.

As a matter of bitter and practical experience, most children with adenoids sooner or later become deaf enough to interfere with their studies and mental development; and the habit of attacks of earache after every slight cold in a child almost invariably means the presence of adenoids.

Colds upon colds thicken up the drum and stiffen its conducting chain of tiny bones just as the proverbial dropping of water wears away the stone. The best preventive of deafness is fresh air—twenty-four hours out of the twenty-four. For ninety-nine per cent of us, the statement, "No colds, no deafness," would be literally true.

Of course the more completely we can avoid colds the better it will be, not merely for our ears, but also for our joints, our hearts, our kidneys, our livers, and our nervous systems, for the conviction is steadily growing that these puny "little foxes" in the body vineyard, these mere rats and mice in the House of Life, probably cause more Bright's disease, organic heart disease, gout, rheumatism, and neuritis than any other single influence.

Though this "counsel of perfection," of absolute avoidance, is impracticable in the present state of our intelligence and the health conscience of the community, fortunately the very same measures which reduce the risks of cold-catching to the lowest possible minimum are also those that will enable us to acquire immunity from colds, resist them vigorously when they do occur, and throw them off cleanly and promptly. So that if we live cleanly, wholesomely, happily, with a gentle current of fresh, cool air—popularly known as a draft—blowing across our faces two-thirds of the time—day and night—with plenty of exercise in the open air, plenty of rich and appetizing food and plenty of sleep, we can practically snap our fingers at colds and ninety-nine per cent of their deadly consequences, including deafness.

POINTS OF LEAST RESISTANCE

Our noses and throats are evidently, under civilization at least, points of least resistance in the body. This is illustrated by the fact that they are not only the site of the commonest of all our diseases—colds and their relatives—but are also the port of entry for at least half, if not two-thirds, of our more serious infections, such as measles, scarlet fever, smallpox, diphtheria, and so on. It is a useful and practical procedure to keep in your bathroom or your bedroom, or on a shelf of your medicine chest, some form of mild alkaline and antiseptic nasal spray or wash. Your family physician will gladly give you a prescription for one suited to the special conditions of your nose and throat, or the "family" nose and throat. Then use the wash whenever you suspect that you have been exposed to risk of infection by a common cold—for instance, when you have been to the theater or to church, or in a crowded, stuffy, smelly train or street car—or whenever you feel any sensation of tickling, dryness, or stuffiness in the nose and throat, and with redoubled vigor when you think you are catching cold. I know of no "stitch in time" in our hygienic economy that is more likely to "save nine" than this simple procedure.

The chief things needed in these washes are that they should be as nearly as possible of the same density—specific gravity—and temperature as the blood, and not too strongly antiseptic; for it is almost impossible to make them strong enough to kill or even seriously injure the germs in the nostrils without making them injurious to the delicate membrane of the nose. If properly adjusted to individual conditions they are perfectly harmless and have a decided effect in diminishing the probability of colds being caught, the severity of their attack if they do occur, and the likelihood of their hanging on or producing unpleasant after-effects. Then, in the event of a definite impairment of hearing which does not promptly subside within two or three days, consult your family physician or a nose-and-throat specialist. Nothing is easier than to cure deafness at this stage of the process, and even a single treatment now may be the means of blocking the way in the direction of serious and permanent hardness of hearing.

DANGEROUS BUT NECESSARY

It may perhaps excite wonder in some minds as to why that wretched little rift in the lute, that fatal leak in the side of our bark of hearing—the Eustachian tube—was introduced or permitted in our bodily make-up by Nature. In view of its dangerousness, why should we not stitch or plug it up completely in some way and thus protect the middle ear from a

thousand risks? Unfortunately it is as necessary as it is dangerous. If our eardrum is to vibrate at all it must have air on both sides of it, and the pressure of the air inside or behind it must be kept equal to that on its outer surface; and this tube is simply an equalizing pipe for that purpose, through which air can be sucked into the drum cavity whenever a vacuum begins to form.

Indeed, blocking up the tube alone will cause deafness. The air in the drum cavity is quickly absorbed into the blood, producing a partial vacuum, and then the atmospheric pressure of the outside air upon the drum pushes it in, so that it can no longer vibrate, and at the same time it jams the little chain of bones together so tightly that they cannot transmit the sounds. This is one of the methods by which middle-ear deafness is produced—the tube becomes blocked by inflammation, the drum is driven in by the pressure of the outside air, and slow fibrous changes tie it down and glue the bones together—and permanently fix them so. This is why the mere driving out of a bubble of air along the Eustachian tube—as, for instance, when you blow your nose and your ear "goes pop"—will sometimes improve your hearing when your head is stuffed up and your ears feel blocked and full.

EVERY CLOUD HAS ITS SILVER LINING

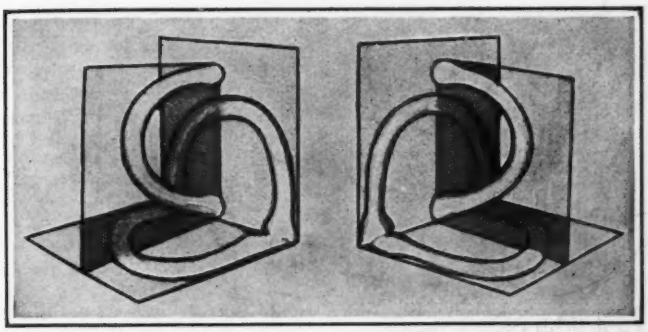
However, every cloud has its silver lining—and deafness is no exception. In spite of the swarms upon swarms of enemies that threaten the peace of our eardrums, and the frequency of some degree of hardness of hearing after middle life, there are two or three consoling items to be entered on the credit side of the ledger. The first of these is that, as we have already seen, all these conditions are not only preventable but in process of prevention by the spread of intelligence and the progress of sanitary science. The second is that the vast majority of cases of deafness, even after they have got a good start, can be kept from developing beyond the stage where there is still sufficient hearing left for most practical purposes. And, last and most fundamental of all, middle-ear disease, which causes nine-tenths of all deafness, almost never completely destroys hearing.

This last is inherent in the nature of the affection; for, as we have seen, the middle ear consists entirely of conduction apparatus, and the real, live, essential parts of the organ of hearing—the nerve and the sound-keyboard—are absolutely untouched and as perfect as ever. So that, if we can only get sound waves to reach the internal ear by some hook or crook, it can still hear them. The easiest and, so to speak, the most open route for sound waves to reach the nerve of hearing is, of course, through the ear canal, the drum and its bones; but luckily this is not the only channel.

Just as soon as sound waves are loud enough to jar through the bones of the head, they can reach the nerve of hearing and be heard, though the ear be completely blocked. Upon this fact depends the usefulness—unfortunately not very great—of the various trumpets, tubes, and fan-shaped hearing instruments. Some of these are pressed into the ear; some rest upon the upper front teeth, if these be still our own; but all such appliances help chiefly by virtue of the fact that they collect sound waves and communicate them directly to the bones of the head and through them to the nerve of hearing.

The ear-trumpet assists the hearing partly by the size of its mouthpiece or bell, which collects the sound waves and somewhat magnifies them, and partly by its pressure on the ear, which brings the instrument into direct contact with the bones of the head. The speaking tube is more effective yet, because the lips of the speaker are held so close to its mouthpiece that the vibrations of his voice are communicated directly to the walls of the tube and carried by them to the bones of the deaf person's head and thus to his nerve keyboard.

LIP-READING FOR HEARING CHILDREN.—A teacher of voice culture and reading in a school for hearing children writes: The lax methods of speech, common among the children, I am endeavoring to overcome by the study of articulation, and, having some knowledge of methods used for deaf and defective children, I commenced training the normal child in a somewhat similar manner, emphasizing the *correct* production of speech. I have children from six to eighteen years of age taking this course in articulation as an offset to incorrect speech in common conversation, such as "Wha' chu doin'?" "Don't chu go," "Put cher hat on," etc. I am using *part* of the method of lip-reading, as suggested in Mr. Nitchie's book, "Lip-reading for Self-instruction," also recommended to me by Dr. Makuen. If correct speech can be taught successfully to a *defective* child, surely a normal child should be taught the same. I fear the ears of many a teacher become so accustomed to incorrect sounds and colloquialisms that such are taken as a matter of course instead of being corrected. I cannot begin to express the intense interest all of my pupils (some 40 in number, divided into several classes) are taking in this branch of work and how eagerly they are trying to overcome incorrect speech, especially since they note its value in *silent* speech. Many have never before had their attention called to their defects, and the advancement they are making in reading since I have supplemented it by additional study in articulation is really astonishing. I shall need the VOLTA REVIEW monthly that I may gain all the help possible for my new undertaking. They enjoy lip-reading very much and note that each sound and word must be clearly enunciated in order to be understood. This adds to their spoken words and we all find the work most gratifying.



Courtesy of Harper's Magazine

DIAGRAM TO SHOW THE POSITION OF THE PLANES OF DIRECTIONS OF THE SEMI-CIRCULAR CANALS IN THE HEAD, LOOKING FORWARD, WITH HEAD ERECT

THE ORGAN OF EQUILIBRIUM IN MAN AND ANIMALS

BY DR. EDWARD A. AYERS

WE ARE indebted to *Harper's Magazine* for the following extract and illustrations from an article by Dr. Edward A. Ayers on "The Seventh Sense in Man and Animals," which appeared in the March issue. The article deals specially with the function of the semi-circular canals of the ear as the organ of equilibrium. Dr. Ayers says:

"It is very dark in the brain, and the brain has no conceptions of its own, except in abstruse cogitation, and most of its conceptions are derived from and shaped upon the particular knowledge gained from its sense messengers. We think of events through their qualities—lights, colors, sounds, scents, etc.

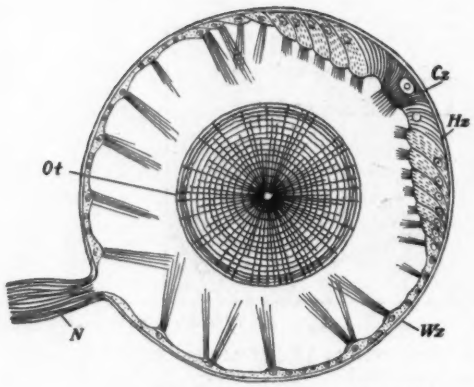
"Now the equilibrial organs inform us, in distinction from all the other senses, not of the outside world's relations to us, but of our relations to the outside world. And they are automatic. This automatism of the equilibrial sense has made it doubly difficult to determine the functions of the semi-circular canals. The pancreas is wholly automatic, but its secretions for starch digestion can be obtained pure and chemically analyzed. But no machine has ever been invented that can weigh or analyze a sensation, even less sensations which seldom reach consciousness.

"Some of the secrets of the semi-circular canals can be forced into the open by destroying them and observing the effects. Injury to one of the three canals in one ear will cause exaggerated movements of the head in the plane of that canal. Thus, if the horizontal canal in a pigeon be injured, the bird will swing its head to right and left in unusual degrees, and, after injury to one of the perpendicular canals, will turn somersaults forward or backward. It will not try to fly, and if thrown into the air will lose steering control and flop to the ground.

Courtesy of Harper's Magazine

DIAGRAM ILLUSTRATING THE MODE OF ACTION OF THE SEMI-CIRCULAR CANALS

In the left canal the body is advancing, the inclosed fluid presses backward, through inertia, which bends the hair cells (cilia) backward (to the left in the cut); the ball (otolith) also presses backward. In the canal to the right the body is moving to the left (backward). On coming to a halt the ball settles to the lowest part. The arrows show the direction of the movement.



Courtesy of Harper's Magazine

A PRIMARY FORM OF THE ORGAN OF EQUILIBRIUM, FOUND IN THE HETEROPOD MOLLUSK (AFTER CLAUS.)

N, the nerve (called auditory nerve, but it is an equilibrial nerve in primary form). *Ot*, an otolith, or ear-stone, floating in fluid; *Wz*, sensory hair-cells; *Hz* and *Cz*, other forms of sensory hair-cells.

"Severance of the nerve connecting the canals with the cerebellum in a dogfish causes it to stop swimming and lie like a listed ship to starboard or port, or to turn turtle. The dogfish might be able with its eyes to see that it is lying out of plumb, but would not try to trim boat. It could not succeed.

"Every sense organ can be worked into a state of irritation. The eye sees after-image suns some time after sun-gazing; the ear hears the roar of a cannon after the air has ceased vibrating. This is not ear-drum reverberation, but postphone scolding by the sensory hair-cell's nerve terminals.

"Every child discovers that a dervish whirl will cause dizziness and collapse, and thinks it fun to play tag with its abused semi-circular canals. The deaf, whose equilibrial organs were consumed with those of hearing in the flame of meningitis or scarlet fever, may whirl and not grow dizzy. Dead cells cannot scold. Neither are such equilibrially deaf prone to grow dizzy on heights, nor when hit on the head. Nor, in the dark, can they stand on one leg, nor on two on an inclined plane, nor keep on a narrow plank path in walking.

"Balis, who became deaf through meningitis after learning speech, and who was probably injured in the left semi-circular canals only, states: 'Locomotion in the twilight demands the whole available right of way, unless I have a fixed point to guide me. At night I must have a light-guiding point or be able to touch something. In passing persons and things on my left, it is often impossible to avoid collisions, though to pass on my right there is no difficulty. I cannot walk straight with one eye closed, or swim without going under on the blind side. I go under on either side when I attempt to swim in the dark.'

"The story of the thirty deaf who 'owned the ship' and never missed a meal, while ear-sound fellows groaned through a three days' storm, is cheerily preserved in the records.

"The deaf are peculiarly liable to drown, if their semi-circular canals are destroyed, from bewildering loss of direction sense. Gallaudet College for the deaf supplies a 'they-say' tale of a deaf boy diving into a ten-foot tank, who mistook a patch of sunshine at the bottom for surface light, and vainly floundered, through lost-direction sense, until, half drowned, his unconscious body floated to rescue by his fellows."

THE AMERICAN SCHOOL PEACE LEAGUE.—Mrs. Lucia Ames Mead believes that "the first thing to be emphasized is that justice and peace between nations will be achieved an indefinite time before justice and peace within nations. This is the reverse of the popular notion. No Hague tribunals or international agreements will prevent civil war, or lynchings, or murder. Universal peace, in the sense of justice and good-will over all the earth, can be achieved only in an indefinite future, when every savage has been to school, when plutocracy and greed have vanished, when all men are brothers. But the business necessities of the world will stop war between nations a thousand years before humanity masters licentiousness, intemperance, and the evils inwrought in our social fabric. The fact to be heralded and trumpeted in the ears of every schoolboy is that, as the last century ended age-long slavery in civilized lands, so the present century is bound to rid the civilized world of war between organized nations. Just as Tennessee and Kentucky never have strife between each other, whatever feuds may exist within them; just as Pisa and Genoa and Florence no longer send forth little armies to attack each other, though riots still occur within their borders; just as Scots and Englishmen no longer draw the sword against each other in the Lowlands, though murders still occur in London and Edinburgh—so nations will end organized war between each other long before they have prevented all strife within. The failure to grasp this fundamental fact is one cause of popular scepticism about the peace movement, which does not aim to change human nature in a century nor attempt the impossible. It aims to substitute world organization for disorganization, to create greater independence, and to bring nations to court just as we bring individuals, cities, and States to court. The coercive powers will be three—a small international police force, public opinion, and the economic boycott or non-intercourse as the final penalty."

Are you a producer or a reducer?

HOW TO PRACTISE LIP-READING

BY EDWARD B. NITCHIE

XVI

HOW TO STUDY THE LESSON

The material given below is to be studied according to the outline in the December, 1911, number of THE REVIEW. For convenience a brief summary of that outline is here given.

1. Understand the movement.
2. Study *Movement Words* with mirror:
   a. To see new movement.
   b. To see each movement.
   c. To see contrasts.
3. Study *Movement Words* with assistant, to be repeated by groups.
4. Study *Contrast Words:*
   a. With mirror.
   b. With assistant.
5. Study *Practise Words* with assistant:
   a. To see new movement.
   b. To see each movement.
   c. To understand sentences composed from the words.
   d. To repeat words quickly, skipping.
6. Study *Sentences* with assistant:
   a. To see (1) the sentence, then (2) its variations.
   b. To repeat original sentences quickly, skipping.
   c. To see each word.
7. Study *Practise Words* with mirror.
8. Study *Sentences* with mirror.

CONSONANTS REVEALED BY CONTEXT

Y—RELAXED-NARROW

For *y*, as in "yes," the lips are *relaxed* and the opening between the upper and lower lips is *narrow*. It is like the movement for short i. The movement for *y*, however, is so quick that the eye seldom sees it; usually the sound must be revealed by the context.

Y occurs, as a consonant, only before vowels. It is not a common sound, and therefore, though difficult, it causes little trouble.

Movement Words

lee	tea	ye
let	ten	yet
lad	tan	yak
luck	tuck	young
lard	darn	yarn
loo	too	you
lawn	dawn	yawn

Practise Words

yeast	yank	yard[1]	year
yes	young	youth	yelp
yet	yarn[1]	yawl	yolk

Sentences

1. You will need more yeast for your bread. 2. Yes, I know I shall. 3. I am not yet ready to go. 4. Why do you yank the reins so hard? 5. I was watching the mother bird teach her young ones to fly. 6. Will you buy a skein of yarn for me? 7. We should all like to find the fountain of youth. 8. I went for a sail in the yawl. 9. It will be a year before I shall see you again. 10. Did you hear the yelp of that dog? 11. The pudding takes the yolk of one egg.

K, G (HARD), NG, NK—THROAT MOVEMENT

For *k*, as in "kin"; hard *g*, as in "go"; *ng*, as in "rang," and *nk*, as in "rank," a drawing up of the *throat* muscles above the Adam's apple may sometimes be seen. The movement is slight and, if seen at all, must be seen while the eyes are on the mouth. Usually these sounds must be revealed by the context.

Movement Words

tea	ye	*k*ey — eat	e*k*e
ten	yet	*g*et — Ed	e*gg*
tack	yak	*g*ag — had	ha*g*
	tin	*k*id — it	in*k*
tuck	young	*c*ut — hut	hu*g*
darn	yarn	*c*art — art	ar*k*
too	you	*c*oo — toot	du*k*e
	took	*c*ook — good	coo*k*
daw	yaw	*c*aw — awed	au*k*

Practise Words

*k*eel	*c*art[2]	beg[4]	rin*k*[6]
*g*et	*c*oon	rac*k*[5]	ru*g*
*c*at[1]	*g*ood	ra*g*[5]	hoo*k*
*c*an[1]	*c*all[3]	ran*g*[5]	wal*k*
*g*ift	*g*all[3]	ran*k*[5]	*q*uart
*c*uff	lea*k*	ri*g*[6]	*c*ream[7]
*c*ard[2]	pec*k*[4]	rin*g*[6]	*c*reep[7]

Sentences

1. The boat was sailing on even keel. 2. What time do you get up in the morning? 3. Have you a cat at your house? 4. "The gift without the giver is bare." 5. I have lost

one of my cuff links. 6. Are you going to the card party this afternoon? 7. Did you ever go hunting for coon? 8. "When she was good she was very, very good." 9. I thought I heard you call to me. 10. Did you find the leak in the roof? 11. I was in a peck of trouble. 12. She took a very high rank at school. 13. Did you hear the door-bell ring? 14. "As snug as a bug in a rug." 15. Hang your hat and coat on the hook. 16. Will you take a walk with me? 17. I bought a quart of milk and half a pint of cream. 18. The baby is just old enough to creep.

H

For *h*, as in "hat," there is no movement. *H* has the appearance of the following vowel and can be seen only in slow and exaggerated utterance. In ordinary speech it must always be told by the context.

Since *h* has no distinguishing movement, the *Movement Words* are not given for this sound; and in the following *Practise Words*, where a word is given without the *h*, it will in each instance be homophenous to the word immediately preceding it.

Practise Words

*h*eat[1]	*h*ave	*h*eart[4]	*h*ook
eat[1]	*h*ill[3]	art[4]	*h*all[6]
*h*ead[2]	ill[3]	*wh*ose[5]	*h*aul[6]
end[2]	*h*ut	ooze[5]	all[6]

Sentences

1. Do you feel the heat very much? 2. What shall we eat for lunch? 3. Give the horse his head. 4. What have you done? 5. "Jack and Jill went up the hill." 6. It is an ill wind that profits nobody. 7. There is a little hut up on the mountain. 8. "Faint heart never won fair lady." 9. "Art is long, but time is fleeting." 10. Whose is the house upon the hill? 11. I felt the fish nibble at my hook. 12. All's well that ends well.

DIPHTHONGS (*Continued*)

DIPHTHONGS WITH RELAXED AND NARROW FINAL MOVEMENT

LONG ā

For long ā, as in "late," the first movement is like that for *e* in "let," the extended-medium; but for long ā, this extended-medium movement is followed by a quick relaxed-narrow movement. The relaxed-narrow element is difficult to see in this diphthong; it has the effect of making ā slightly slower in formation than *ĕ*. Frequently, however, the two sounds must be told apart by the context.

Contrast Words

Contrast long ā with short *ĕ*, noticing the slower formation for ā.

aid — end	shave — chef
bait — bet	lace — less
wail — well	bathe — Beth

Practise Words

pail[1]	*s*ave	*g*ave	*f*aith
mail[1]	*sh*ame[4]	*h*aste	*ail*[7]
fail[2]	*sh*ape[4]	*a*im	*ale*[7]
veil[2]	*th*ey	*w*ave[6]	*sh*ade[8]
*w*ay[3]	*l*ame	*w*aif[6]	*ch*ain[8]
*w*eigh[3]	*n*ame[5]	*r*ace	*b*ake[9]
*r*ay	*t*ame[5]	*p*age	*m*ake[9]

Sentences

1. Will you mail my letter for me? 2. "There is no such word as fail." 3. Where there's a will there's a way. 4. The baby was like a ray of sunlight in the house. 5. Save the pence and the pounds will take care of themselves. 6. What is the shape of the room? 7. Have they told you all about it? 8. The horse seems to be lame in his left fore foot. 9. What is your name? 10. She gave me her name, but I have forgotten it. 11. More haste, less speed. 12. I cannot see what you aim to accomplish. 13. The wave swept me off my feet. 14. Have you ever heard of the race between the hare and the tortoise? 15. There is a page torn out of the book. 16. I have unbounded faith in you. 17. What ails you? 18. Will you pull down the shade for me? 19. You will make the mistake of your life if you do that.

LONG ī

For long ī, as in "pipe," the first movement is like that for *ah* in "palm," the relaxed-wide; but for long ī, this relaxed-wide movement is followed by a quick relaxed-narrow movement.

Movement Words

pay, p*ie* — ape, *I'm*
fay, f*ie* — knave, kn*ife*
way, wh*y*
ray, r*ye* — *ire*
say, s*igh* — ace, *ice*
shay, sh*y*
they, th*y* — lathe, t*ithe*
lay, l*ie* — ale, *isle*
nay, n*igh* — aid, *I'd*
gay, g*uy* — lake, l*ike*
hay, high

Contrast Words

Contrast the sound of long ī and of *ah;* notice that both begin with the relaxed-wide movement, but that ī is followed by the relaxed-narrow, while *ah* is not.

pipe	— palm	light	— lard
mice	— mars	dine	— darn
pike	— park	I'm	— arm

Practise Words

pie[1]	sight	kite[6]	tithe
buy[1]	shy	kind[6]	pile[7]
fight[2]	thy	high	mile[7]
fine[2]	light[4]	wipe	bite[8]
why	line[4]	hive	might[8]
ripe[3]	time[5]	wire	pine[8]
rhyme[3]	type[5]	wise	like

Sentences

1. Will you have another piece of pie? 2. "We do not want to fight, but——." 3. Why did you not tell me before? 4. There is neither rhyme nor reason in the matter. 5. My eye-sight is very keen. 6. The little girl seems to be somewhat shy. 7. Put out the light. 8. What time is it? 9. It is very kind of you to do that for me. 10. There was a high wind during the storm. 11. Wipe the slate clean and begin again. 12. The bees are buzzing around the hive. 13. I will wire you as soon as I arrive. 14. I think that would be a very wise thing for you to do. 15. She gives a tithe of her income every year. 16. The aëroplane was flying faster than a mile a minute. 17. "Good night, sleep tight, and do not let the mosquitoes bite." 18. How do you like that?

OY

For *oy*, as in "boy," the first movement is like that for *aw* in "paw," the puckered-wide; but for *oy*, this puckered-wide movement is followed by a quick relaxed-narrow movement.

Movement Words

bay, buy, b*oy*
fail, file, f*oil* — knave, knife, c*oif*
ray, rye, R*oy*
sail, side, s*oil* — days, dice, t*oys*
lain, line, l*oin* — ale, isle, *oil*
day, tie, t*oy* — cane, kine, c*oin*
gay, guy, c*oy*

Contrast Words

Contrast the sounds of *oy* and of *aw;* notice that both begin with the puckered-wide movement, but that *oy* is followed by the relaxed-narrow, while *aw* is not.

boy	— paw	oil	— all
point	— pawn	troy	— draw
foil	— fall	coif	— cough

Practise Words

b*oy*	s*oil*	c*oil*	n*oise*
f*oil*	l*oin*	*oil*	br*oil*
r*oil*	t*oil*	c*oif*	v*oid*

Sentences

1. The boy carried the message for me. 2. The candy was wrapped in tinfoil. 3. Why do you try to roil me? 4. You will soil your clothes unless you put an apron on. 5. I bought a sirloin steak for dinner. 6. "Double, double, toil and trouble." 7. She wore her hair in a coil. 8. Pour oil on the troubled waters. 9. She wore a coif on her head. 10. What was that noise I heard? 11. Will you broil the steak? 12. The law was rendered null and void.

XVII

R AFTER VOWEL

As a rule, *r* after a vowel is slighted or slurred. It only rarely shows the strong puckered-corners movement that it does before a vowel. Depending upon the care with which it is pronounced, it may show (1) no movement at all, or (2) the relaxed-medium movement—"our," for example, like "*ow-uh,*" or (3) a slight puckered-corners movement.

R, AFTER VOWEL, SHOWING NO MOVEMENT

An *r*, after a vowel and before a consonant, as in "farm," usually shows no movement.

Practise Words

arm[1]	barb	orb	warm[3]
harm[1]	sharp[2]	form	warp[3]
harp[1]	charm[2]	fort	short
farm	shark	born	thorn

Sentences

1. Were you vaccinated on the arm? 2. The farm was abandoned and overgrown with thorns. 3. Did you ever climb through a barbed-wire fence? 4. There was a sharp wind from the northeast. 5. A shark swam along in the wake of the ship. 6. The moon is the orb of night. 7. Your lips form the words very well. 8. The fort was captured by the enemy. 9. "Full many a flower is born to blush unseen." 10. The wood was badly warped from the dampness. 11. "The longest

way round is the shortest way home." 12. Every rose has its thorn.

R, AFTER VOWEL, RELAXED-MEDIUM

A final *r* in an accented syllable, occurring after a long vowel, tends to become like short *ŭ* and to show the relaxed-medium movement, though it may show a slight puckered-corners, in which case the preceding long vowel will probably be somewhat shortened.

Practise Words

fear	rear	deer[3]	sure
peer[1]	shear[2]	dear[3]	tour
beer[1]	cheer[2]	poor[4]	pure
we're	spear	moor[4]	cure

Sentences

1. We will show neither fear nor favor. 2. I thought I saw you peer into the window. 3. We're going away for a long time. 4. You will find a seat in the rear of the car. 5. Cheer up! The best is yet to come. 6. Did you ever try to spear eels? 7. Fresh eggs are always very dear in the winter time. 8. He was as poor as a church mouse. 9. You must be sure to tell me about everything. 10. Would you like to take a tour around the world? 11. The water from the spring is as pure and clear as crystal. 12. Do you know anything that will cure a cold?

R, AFTER DIPHTHONG, RELAXED-MEDIUM

A final *r* in an accented syllable, occurring after a diphthong, tends to become like short *ŭ* and to show the relaxed-medium movement, though it may show a slight puckered-corners, in which case the preceding diphthong will tend to lose its diphthongal quality and to show only its emphatic element.

Practise Words

air	chair[4]	tire	shore
fair[1]	their	ore	lore
fare[1]	lair	four	door[6]
pare[2]	dare	pore[5]	tore[6]
pair[2]	care	bore[5]	core[7]
bear[2]	fire	more[5]	gore[7]
wear	mire	wore	our[8]
rare	wire	roar	hour[8]
share[3]	lyre	sore	sour

Sentences

1. Do you feel the air from the window? 2. Faint heart never won fair lady. 3. I cannot bear a strong light in my eyes. 4. You must wear your new dress to the reception. 5. I prefer my roast beef rare, if you please. 6. If it rains, you may share my umbrella. 7. I will take their word for it. 8. Don't you dare to do that. 9. I don't believe I care to go to the meeting. 10. The fire burned the house to the ground. 11. I will wire you as soon as I arrive. 12. We came home in the automobile on a punctured tire. 13. I will meet you at four o'clock. 14. The more we know the more we want to know. 15. His enthusiasm wore off after a while. 16. The surf broke with a roar on the beach. 17. I hope you are not going to have a bad sore throat. 18. Shove the boat off from the shore. 19. Do you know the lore of the birds? 20. Will you please open the door for me? 21. I gave the horse the core of the apple. 22. At what hour shall I come to see you? 23. The fox called the grapes sour because he could not reach them.

UR—PUCKERED CORNERS

The sound of *ur*, as in "turn," shows usually only the puckered-corners movement; the *u* does not show a separate movement, but is absorbed by the *r*.

Occasionally, however, only the relaxed-medium movement is seen for *ur;* this is especially common when the sound is final, as in "fur."

And occasionally, also, *ur* shows both the relaxed-medium (for the *u*) and the puckered-corners (for the *r*); this is common where the *ur* sound is followed by a vowel in another syllable, as in "hurry."

Practise Words

fur	were[2]	chirp	curve
firm[1]	whir[2]	learn	yearn
verb[1]	worm	turn[3]	hurt[4]
burr	surf	dirt[3]	heard[4]

Sentences

1. The muff is made of the fur of the blue fox. 2. They took a firm stand in the matter. 3. Have you ever read "The Opening of a Chestnut Burr"? 4. I hear the whir of machinery. 5. The worm will turn. 6. Let's go swimming in the surf. 7. The birds chirp happily among the trees. 8. Will you never learn any better? 9. Things will take a turn. 10. The train came around the curve. 11. Did you hurt yourself very much? 12. I never heard of that before.

SHORT ŏ

For the sound of short *ŏ*, as in "odd," "on," etc., there are two possibilities, depending upon the speaker's pronunciation.

First. Short *ŏ* is more commonly heard as an extremely short sound of Italian *a* (*ah*); when so pronounced it shows the relaxed-wide.

second. Short *ŏ* is also quite commonly heard as an extremely short sound of broad *a* (*ä*); when so pronounced it shows the puckered-wide movement. A few words, such as "dog," "long," "lost," etc., are almost always heard with this sound.

Practise Words

fop[1]	shop[2]	yacht	loft
fob[1]	chop[2]	odd[4]	long
pot	lot	hot[4]	lost
what	dot[3]	on*	dog
rob	knot[3]	off	cross
sob	cot	soft	cost

Sentences

1. Would you like a watch fob for a Christmas present? 2. A watched pot never boils. 3. I don't know what I am going to want. 4. Thieves robbed the house while we were away. 5. She sobbed as if her heart would break. 6. Did you have a chop for breakfast? 7. I bought the house and lot at a great bargain. 8. You must not forget to dot your i's. 9. I slept on a cot all the time I was in camp. 10. Would you like to go for a sail with me in my yacht? 11. There was a hot fire in the grate. 12. Come on with me. 13. I'm going off for an all-day tramp. 14. The turf was very soft after the long rain. 15. We had a merry time in the hay loft. 16. That is the long and short of the whole matter. 17. I thought you were lost! 18. Old Mother Hubbard went to the cupboard to fetch her poor dog a bone. 19. She was as cross as two sticks when I spoke to her. 20. What would it cost to paint the house?

LONG OR SHORT OO

There are a number of words, such as "roof," that are currently pronounced with either the long or the short sound of *oo*, and hence show either the puckered-narrow or the puckered-medium movement. The long sound is more common and is preferred by orthoepists.

Practise Words

roof	soon	hoof
room	soot	hoop
root		

Sentences

1. The roof has a bad leak. 2. There was a crowd of people in the room. 3. That is the root of the whole trouble. 4. I will be with you very soon. 5. The chimney was fairly choked with soot. 6. I saw the imprint of a deer's hoof in the woods. 7. The little girl was rolling a hoop along the walk.

A IN "PATH"

There are a number of words, such as "path," in which the *a* commonly has the short sound, as in "pat," and the extended-medium movement, though a somewhat broader sound, nearly equivalent to *ah*, showing the relaxed-wide movement, is more correct.

Practise Words

fast[1]	path[2]	blast	ask
vast[1]	bath[2]	class[3]	task
past	last	glass[3]	grasp

Sentences

1. I took the fast train for Boston. 2. "Let the dead past bury its dead." 3. I made a gravel path around the garden. 4. Where were you last night? 5. The house shook from the blast. 6. Would you like a glass of water? 7. I shall have to ask you to go to the post-office for me. 8. When you have finished your task you can rest for awhile. 9. A drowning man grasps at a straw.

X

The letter *x* represents a combination of two sounds, namely, of *k* and *s* (as "box" = "boks"), or of *g* and *z* (as "exact" = "egzact"). Hence theoretically the sounds represented by *x* show a combination of the throat movement and the tremor-at-corners movement. Practically, however, the throat movement is seldom seen, so that *x* looks like *s* or *z*. This will be seen by contrasting "next" and "nest," "hoax" and "hoes."

Practise Words

fox	flax	next[1]	vex
box	six	text[1]	phlox

Sentences

1. Did you ever go on a fox hunt? 2. I bought a box of candy. 3. Her hair is the color of flax. 4. The clock has just struck six. 5. I will see you again next week. 6. I wish you would not vex the cat. 7. I have a bed of phlox in my garden.

* "On" may be homophenous with "odd" and "hot," though through to this point the words are usually given with relaxed-wide for the *o*, while "on" is often puckered-wide. All the words in the list after "on" usually show the puckered-wide.

MONTESSORI METHOD APPLICABLE TO THE DEAF

BY MRS. A. RENO MARGULIES

IN MY introductory article I mentioned the changes that had taken place in the education of the deaf child, and spoke particularly of the conviction that had come to the educator—that mental development had to come first—that language teaching was only then possible. To bring about this mental development, the educator of the deaf had not only devised special methods for this class of children, but had adopted or adapted whatever had been found successful in the public schools. Whether this adoption or adaptation of public-school methods has worked for the best interests of the deaf child is still an open question, and must be so as long as the educator of the normal child condemns them, as in many instances he does.

The cry has been that these methods kill the individuality of the child, and that hundreds of children who could have developed along their "long" lines remain year after year in the same grade, eventually being stamped as abnormal or as "stupid." What can be done by special methods has so frequently been shown that there is no question of the imperfection of a method which treats all children as if of one stamp. This holds good in our public schools with classes of sixty, and in our schools for the deaf with their classes of ten. It is true we have the "special class" and the "ungraded class," and while they are good in their way, they do not solve the question whether the average child receives the training that will make of him an efficient human being.

The Montessori method offers this to the normal child; and, as all our efforts are put forth to make our deaf child the equal of the normal one, the same method applies to the deaf child. In fact, its possibilities with the deaf child are in some ways even greater. The Montessori method, based as it is on psychologic principles, must be applicable to any child. Its adaptation to the needs of the deaf is necessary in only one direction: in the material used (the sense-training apparatus) to bring about the intellectual development. Solely in the games used to develop the auditory sense, changes will have to take place, and even these can be so easily arranged as to serve another purpose; as, for instance, in the game of "Silence," where lip-reading takes the place of hearing.

This game is played by the children taking their seats. The teacher quietly draws all the shutters, until the room is in semi-darkness. She then stands in the doorway and looks at the children, who by degrees stop their wriggling and sit perfectly still, expectantly watching the teacher. When there is perfect silence in the room she whispers a name, and the child called tiptoes out of the room. Not a sound is heard—no creaking of shoes, no knocking against the furniture. Absolute silence must reign, so that the next name called can be heard. When a dozen of the children have tiptoed out of the room, the game is over.

How easily this could be used with lip-reading to develop the child's attention and concentration and awaken interest. To give muscular control for overcoming the habit of shuffling, so frequently found in the deaf, both young and old, it would be an excellent exercise. Whatever changes would have to be made in these games are so slight that they play no part in the consideration of the merits of the method. Therefore I feel justified in recommending to the schools for the deaf the introduction of this method. I do not ask them to make radical changes at once in their methods. I ask only that this method be studied and given a trial as soon as trained teachers can be procured. And by this I mean teachers trained by Dr. Montessori, or by those who have been authorized by her to open training schools.

The gravest danger lies in any effort to introduce the method into the schools without teachers such as Dr. Montessori has in her own schools. An idea of what she wishes her teachers to be after their training in the experimental science is best given in her own words: "From her preparation the teacher should bring not only the ability to observe natural phenomena, but an interest in doing so. She, in our system, must be a *paziente* (patient one), passive much more than active, and her patience must be composed of anxious, scientific curiosity, and of absolute respect toward the phenomenon that she wishes to observe. The teacher must feel and understand her position of observer. The activity must be in the phenomenon. Such principles surely have a place in schools for little children who are exhibiting the first spiritual and mental manifestations of their lives. We must respect reverently, religiously, the first indications of individuality, and if any educational act is to be efficient, it will be only that which tends to help toward the complete unfolding of the inner life of the child. To be thus helpful it is necessary to rigorously avoid the arrest of spontaneous movement and the imposition of purely arbitrary tasks.

"The training of teachers not prepared for scientific observation has convinced me of the great distance separating the imperialistic methods of the public schools and this method. Even an intelligent teacher who understands the principle finds much difficulty in putting it into practise. She cannot understand that her task is apparently passive, like that of an astronomer who sits before the telescope. This idea that life acts of itself, and that to study it, it is necessary to observe it and come to know it without intervening in a way to suffocate the activity of the pupils, is very difficult to grasp."

It is important that teachers contemplating the adoption of this method of Dr. Montessori shall guard against confounding the didactic apparatus with the method itself. There is danger that the teacher will believe that the apparatus is simply another "kindergarten occupation" unless she has scientifically investigated the method. In many instances our kindergartens have failed in their aim because of the teachers' lack of the knowledge of the scientific relation between the materials used and the method which they represent. In our public-school systems, boards of education, superintendents, and principals have long been the victims of publishers and manufacturers, who have induced them to place in their schools more or less expensive material the pedagogical and psychological value of which the teachers have been given little or no previous opportunity to study or to test.

After a few months of blindly juggling with such apparatus the teachers became discouraged and reported the lack of results as due to lack in the method of which the material was but the exponent. Consequently a visit to the storage-rooms or attics of many of our large public schools might reveal much costly material stowed carefully away and long forgotten, while the method, scientifically good in its inception, has sunk to the level of a passing fad.

Too often in these days of rapid progress is the ambitious young teacher lured into a training in the manipulation of apparatus and material, thinking she is being taught a method of education, and her instructors honestly believing they are teaching her one. The result invariably is the death of the method exploited through these materials, in many instances before the polish of the factory has been rubbed from their surface by the little hands that so eagerly grasped the new toys. The profit has been solely to the manufacturer, who, with replenished coffers, turns his attention into new commercial channels. The loss has been to the teacher, who has failed in her aim, and to the children, who have been retarded through her failure. So again I make a plea for the proper scientific training of teachers before any didactic material is brought to their attention.

WHAT IS THE ULTIMATE AIM IN EDUCATION?

BY CANDACE A. YENDES

IF THIS query were propounded to teachers in general, no doubt most of them would unhesitatingly answer: "To train the child's senses, develop his powers of observation and concentration, cultivate his memory and reasoning faculties, give him a good physique and teach him how to care for it, and lead him to admire the beautiful and love the good."

I wonder if, in our eagerness and zeal to accomplish all that has been enumerated as among the essentials, and in our ambition to have pupils shine in examinations, we are not sometimes in danger of acquiring a misconception as to the real purpose, value, and end of education.

Dr. Nicholas Butler proposes the following five tests of education:

1. Correctness and precision in the use of the mother tongue.
2. Those refined and gentle manners which are the expression of fixed habits of thought and of action.
3. The power and habit of reflecting.
4. The power of intellectual growth.
5. Efficiency, or the power to do.

Dr. Butler considers that man educated who has acquired these qualities and habits—all excellent, it must be conceded, but lacking, it seems to me, in one supreme essential. He does not go far enough and put proper emphasis on soul culture and the responsibility of the individual as a social unit.

The ancient Greeks considered a beautiful soul in a beautiful body the end and aim of education; the Hebrews desired to become faithful servants of Jehovah; the Persians sought to develop physical strength and moral rectitude; those of ancient India, to preserve caste distinction and prepare for absorption into Nirvana; while their neighbors, the Chinese, considered that to impress traditional ideas and customs and to preserve the established order of society constituted a highly educated person.

We used to think that the mastery of the sciences and languages, dead or otherwise, essential and sufficient. Now we teach these, together with physical culture, manual training, and numerous other *et ceteras*. But are we making our youth more manly and womanly, more gallant and knightly, more pure in heart and habit, more lovely in word and deed? Are they more considerate of others, more ready to bear burdens, more respectful of the rights of others, because more self-respecting? Are we developing better mental and moral fiber?

In my opinion that man has not been educated who fails to recognize his responsibility as a citizen and as an integral part of the community in which he lives.

Undoubtedly we all know men and women who are ideal husbands and wives, but who have not the slightest idea that they owe anything to their fellow-men. They are indulgent, devoted to their families, and self-sacrificing to a fault in the family, but do not possess enough public spirit nor civic pride to sacrifice anything in the way of time, money, labor, or effort toward an enterprise which will contribute to the advancement or well-being of another man's family, or that of the public in general.

No doubt this self-interest has its root in selfishness, which Webster defines as "Exclusive regard to one's own interest or happiness; that supreme self-love or self-preference which leads a person to direct his purposes to the advancement of his own interest, power, or happiness, without regarding those of others."

Its synonym is self-love, which is the antipode of selflessness. Dr. Hillis once said that "to make great souls of good quality is the chief business of a country," and you and I, fellow-teachers, are the deputies to whom this great work has been committed, and now is not too soon

to begin, for tomorrow or next year may be too late.

The question that confronts us then is, How shall we set about accomplishing this stupendous task?

It seems to me that there can be but one answer, and that is by the development and molding of character, which is of vastly more importance than great knowledge or familiarity with many isms and ologies.

For character never faileth. Whether there be knowledge, it shall pass away. Whether there be learning, it shall vanish. Whether there be manners and polite deportment, they shall one day fail. And now abideth knowledge, culture, character—these three. But the greatest of these is character.

A writer in *American Education* has said: "If we admit that the purpose of an education is to make a person all that he may become, the *training of character must come first.* The ability to make a living will follow.

"The world today stands in need of *men* in every department of life. While this has been called a commercial age, the financial questions have been mastered with wonderful rapidity. The great cry on all sides is for *men.* Let the schools help to create men and women who have true proportions—breadth of mind, depth of soul, and height of ambition that is limited only by justice and brotherly love."

It follows, then, that if we would make true patriots and loyal citizens of those in our charge, we must have in mind not only their own individual well-being, but their development into the full stature of broad-minded, public-spirited men and women, with eyes that look out beyond the narrow horizon of home and individual interests—men who see visions and dream dreams.

As the foundation of character is the culture of the moral sense and sentiment, all training should carry with it the idea of service, for character implies service, and service is what education should ultimately stand for.

In other words, we should strive at all times and in all ways to develop high ideals; and, to accomplish this, we should not be satisfied when we have increased a pupil's knowledge and put a superficial veneer upon him by refining his tastes and improving his manners, but we should make him understand what duty is and fit him to take his place in the world as a man among men, and to fill in the highest and best sense the largest and best place of which he is capable, for in eternity he will be measured by what he is and does rather than by what he knows.

"Impossible!" do you say? Well, one of the teacher's tasks is to accomplish the impossible with the material he has at hand; and no one can accomplish this or teach effectively who does not himself believe with great depth of conviction in his work, himself, and the possibilities in his material. The teacher must ever be optimistic.

Somebody was riding through the street one day with Ruskin, and said: "What disgusting stuff this London mud is!"

Ruskin said, "In that mud there are the sand and soot and water and lime out of which God makes opals and sapphires and diamonds."

Deep down in the heart of every normal child I believe there is a tendency toward the ethical—a desire to do better, to be better—that will under skillful treatment develop a noble manhood and womanhood. And the influence and power of the teacher may be measured by his ability to recognize and develop this divine spark or energy.

To create in the child high ideals and assist him to work out for himself his highest destiny, the teacher must bear in mind many things:

1. Right habits must be formed to insure character of good mettle, for habit automatically repeated becomes character.

"The man I am to be—that man walks today in me." The teacher, then, should be quick to recognize whatever of good exists in the child as a possibility, draw it out, make the most of it, and lead it

into right channels; to direct his good impulses and lead him into ways that will be good for him to follow after he has left school.

2. There must be time taken for work outside the text-book, which after all is only the means to an end. True progress can seldom, I think I may say never, be estimated by pages.

The true teacher does good in a thousand ways and gets results that cannot be formulated in words nor expressed by an algebraic equation. "By his work we know the master," and the teacher's best work is probably known only to Him who looketh on the heart.

For this reason that teacher is not always the best who most sedulously and punctually carries out the printed program, necessary and helpful as daily schedules are. A program should be so comprehensive and flexible as to allow for interruptions and deviations.

Nor is pin-drop order always to be desired. I call that teacher the best disciplinarian who, while permitting for some reason a certain degree of disorder, can with a word restore order. No child can develop normally and healthfully under military discipline. There must be time for the child's inborn restlessness and activity to have natural expression, and his individual tendencies and inclinations must be recognized and given scope.

Otherwise he will develop into an automaton or its opposite, a prig. Too much repression produces deceit and secretiveness—qualities as undesirable in a child as in an adult.

3. We need often to be reminded not to take a child's faults too seriously. There are certain faults and tendencies that belong to certain periods in his life, and many of the childish faults which distress us belong to immaturity and will be left behind by the child with his outgrown clothes as he emerges from one period of his existence into another.

However, we need to make a wise discrimination between the faults that grow with the years and those that fade with them, and the sooner we learn to shut our eyes to the petty faults which belong to childhood the quicker we shall gain strength to combat the more serious ones.

4. It is example rather than precept that counts. Acts speak louder than words, and environment may be made more influential than rules in establishing ideals and a desire to realize them. All unconsciously, but none the less effectively, do we impress upon our pupils our own ideals, for that indefinable something which we call atmosphere, or personality, is one of the most potent, though often the least considered, factors in teaching.

That which we are we teach involuntarily, and the impulses and forces set in motion in the school-room often reach into eternity. If this were not true, the teacher's influence would be much more limited than it is. If we could know all the influences that affect the lives of our pupils, I have no doubt we should have some surprises, and we might discover that those items which were of most real service to him are seldom entered on the books or charged up to his father.

5. In order to influence a boy to make the most of himself, we must first reach his heart. His confidence may be won by taking a genuine interest in him and his interests. This interest must be permanent, as well as the real article, for if feigned or spasmodic he will not be slow to detect it. We should study him; find out his aims, his needs, his likes and dislikes, and let him see that we understand and sympathize with him and that we appreciate all of his efforts. We should have faith in him, for the more confidence we show in his motives the purer those motives will be. Give him a reputation to live up to—not one to live down—for he will be pretty sure to do credit to either one.

6. Teach the child to do things for himself. Having gained his confidence and demonstrated our interest in and desire to help him, we should develop his resourcefulness, self-reliance, and independence by doing nothing for him that he can do even imperfectly for himself.

The author of *Preston Papers* says: "There can be no true education without labor, without drudgery, without pain; and the teacher who makes things too easy for the child, who turns all work into play, thereby robs the child of hereditary rights—a right to the culture which only drill can give, and drill in the early days, when habit is forming.

"All play is equally as bad for the development of juvenile responsibility as all work is dulling in its mental effect.

"Hold the balance true and maintain the equilibrium fairly, so as to give the child the proper foundation for a useful life, which is the only really happy one.

"Adapt the lessons to the child, in matter, style, and length; but so teach that it seems like studying, so that when he reaches the higher grades he will not go all unprepared for duty. Fit the child now, by means of his small responsibilities manfully met, for the greater ones that ever lie just beyond those of today.

"Don't for one moment think that you are doing him any kindness by shouldering what he should carry."

When the various lines of business of the day can be carried on without work, worry, weariness, or wear, then the popular painless education, which eliminates all these features, will be successful in fitting our youth for their life-work, and not till then.

But, on the other hand, common sense should prevail; and, in avoiding the wishy-washy devices of the painless educators, we should be careful not to go to the other extreme of harshness or severity.

7. We must aim high. "Hitch your wagon to a star!" If we place our ideals low we shall never rise to any great height. It is necessary to have high ideals in order to accomplish all that is possible.

8. We must be true to ourselves, our convictions, and our trusts.

"To thine own self be true;
And it must follow
As the night the day,
Thou cans't not then be false to any man."

9. There must be a definite plan in which there is unity of purpose and harmony of detail. As the architect requires a perfected plan in order to produce a complete, symmetrical structure of wood and stone, so must the teacher in perfecting that noble human structure—character. Each piece must be so carefully adjusted and fitted to its environments that when completed it will stand out a beautiful, symmetrical whole.

8. The teacher, of all people in the world, has greatest need of tact. By one misstroke a workman may forever mar his work, and the character builder, for want of tact, may make a stroke that will permanently mar the structure he is seeking to bring to perfection. Though I speak with the tongues of men and angels, and have not tact, I am become as a sounding brass or a tinkling cymbal.

The architect builds for time in a land where all things perish and decay, but the teacher's structure will stand forever and must bear the scrutiny of the Master Builder and the test of eternity.

With intelligence, then, with sincerity of purpose and honesty in execution, the teacher should strive to work out his ideals; and his reward shall be the consciousness that in helping to perfect a character he has performed a service for the world not excelled by a Canova, a Christopher Wren, an Agassiz, or an Alexander the Great; that out of the soot, lime, water, sand—yea, even mud sometimes—that have come to him, he has produced at least some opals, sapphires, and diamonds.

Is this a laudable ambition? Is the work worthy of our best efforts? I call upon Daniel Webster to answer:

"If we work upon marble, it will perish; if we work upon brass, time will efface it; if we rear temples, they will crumble to dust. But if we work upon immortal souls, if we imbue them with principles, with the just fear of God and love of fellow-men, we engrave on those tablets something which will brighten eternity."

Photo by J. M.

THE WAY THE MAORIES OF NEW ZEALAND CARRY THEIR BABIES

Photo by Blencowe

A PROUD NEW ZEALAND MOTHER CARRYING HER TWIN BABIES IN MAORI FASHION

FIG. 1. BROAD STAIRS—FOR ATTENTION AND DIMENSION (SEE PAGE 162)

THE MONTESSORI METHOD OF TEACHING HEARING CHILDREN

BY MRS. J. SCOTT ANDERSON

THERE are a few points about the Montessori system that all, either teachers or parents, who are interested in education should thoroughly understand.

1. In a "Children's House" (I prefer to use that term to "House of Childhood," and, since Miss George uses it in her translation of Dr. Montessori's book, I have adopted it here) all the pupils can hear. When a directress softly says to hearing children, "Come," or rises to write some command on the blackboard, each child is aware of her movements—their ears help them. It is different with the teacher of the deaf, for she is unable to reach her charges through the sense of hearing. Thus is eliminated one of the greatest holds that the directress of a Children's House has upon the children in her care. Does this not affect the method if we teachers of the deaf attempt to follow the idea of complete liberty?

2. It is wise to repeat here what has been said so often, but what seems to still be clouded by some misunderstanding—that the liberty allowed the children is only such as may be indulged in without impoliteness to others, or in any manner infringing upon the rights of any one. That this kind of liberty is sorely needed

FIG. 2. CHILDREN TEACH EACH OTHER: RICHARD AND ELEANOR (BOTH DEAF) READING THE LIPS OF A HEARING COMPANION (SEE PAGE 160)

by American children nobody will deny. In fact the need is not limited to the young people of the country.

3. In a Children's House the pupils are under the care of a directress all day. There could be no better means devised for the proper training of the children or parents such as were found in the quarters of Rome where the first Montessori schools were established, and there can be no better method adopted by our social settlements than this one, for the mothers and fathers, too, are made to feel the responsibility of their own efforts. The children must be clean, and there are other things which are required of them if they would enjoy the benefits of the Children's House. The mothers must talk with the directress at least once a week.

4. To take a method which is applied in one manner and attempt to adapt it in some other fashion, and not only that, but to adapt it to a class of children who are quite different from those for whom it was evolved, is only an experiment. It matters not whether you are a teacher of the so-called higher classes, and wish to form a three-hour school which shall be based upon the method employed in a Children's House, whether you are a teacher of the blind and wish to adapt the Montessori system to your pupils, or whether you are a teacher of the deaf and are rushing forward to apply the method as you have seen it described in magazines or books. How utterly foolish to attempt to apply it as it is in use in Italy. All general laws imply like conditions. In psychology or mathematics we must have "other things being equal." The three teachers above mentioned have some things equal or the same as the Montessori children (teacher,

FIG. 3. FRAMES—SELF-HELP (SEE PAGE 162)

materials), but they have such a different class of pupils (in the first case, from better educated families, and, in two cases at least, with one of the senses lacking), and in at least one case the school day is entirely different. The deaf child cannot hear (and Montessori lays much stress upon developing the hearing) and the blind child cannot see (and Montessori lays much stress upon the ability to see things as they are—the child's development of the sense of sight). As to the time element, that forms a new obstacle, for we well know what home influence may do or undo. After showing you that the method cannot be applied as it is to any but schools where the same elements exist as in Rome (I do not mean children from the slums necessarily, but I refer to the two main factors: an all-day school and a school with normal pupils), I wish to call your attention to the wonderful method, because there is in it the quality without which no method is perfect—elasticity. It is quite possible to take the Montessori system, use the materials (or at least the greater part of them) in a three-hour school, or in a school for the deaf, and secure a result that is greater than has yet been secured in our schools. But you must bear in mind that it *is* an experiment—but that there is new as well as old material at hand—and that your own application of the method has as much to do with its success as is always the case in teaching—the teacher is responsible for results.

5. Dr. Montessori uses phonetics—teaches the sounds of the letters instead of their names. So do teachers of the deaf.

6. Dr. Montessori lays particular stress upon correct articulation. So do teachers of the deaf.

7. Dr. Montessori's method of teaching writing is based upon the child's ability to hear and repeat sounds of the letters, to recognize the letters when he sees or feels them, and to control the instrument of writing, be it pen or pencil. Here we find that at least part

FIG. 4. CYLINDERS—FOR ATTENTION AND CONTROL (SEE PAGE 162)

of her method could not be applied (as she has done) in the case of deaf children, but that the rest could. We have, however, a good basis for work, and our children need not be very old before they are able to follow the entire method. In fact, many of the sounds are learned by tiny children in my school, and they will be able to follow out the method easily when the time comes. Of course this is only the case where small deaf children are taught.

8. Reading is also based upon the thought that the child must be able to give the sounds of the letters. At the same time Dr. Montessori says, "Indeed, GRAPHIC language does not need spoken words. It can only be understood in all its greatness when it is completely isolated from spoken language" (page 305 of "The Montessori Method"). For years I have felt that we did wrong when we did not make a special effort to teach our children to read all kinds of things with which they were not quite at home. I remember that I used to find my number class a remarkable illustration of the children's ability to grasp a thought, even though they were not familiar with the text in which I expressed it. Dr. Humason told me that my number class was the best language class of the whole school. I pondered that long, and have ever since given a great deal of attention to this kind of work. I know that others do it, too, but I wonder if we do it sufficiently well? Do we have vital things in mind when we write? Do we try to interest the children? At Swarthmore we often write stories on the board and the children act them out. They thoroughly enjoy it. As to the simpler forms of reading, we teachers of the deaf cannot apply the Montessori method as it is, but the thought has already been explained in my "Home Training of the Young Deaf Child," where I showed how a little tot may be taught to place slips of paper bearing the written name of an object upon the object itself. In the Montessori system the child learns to pronounce the sounds that form the word more

FIG. 5. THE TOWER AND DEVELOPMENT OF THE THERMIC SENSE (SEE PAGE 163)

rapidly and more rapidly, until he discovers that what he is saying is what he has heard something called, and he recognizes the whole as the name of the thing itself. Of course the same method could be followed by the teacher of the deaf. She could teach orally the name of an object; and, once the child had learned it, she could have him pronounce the written word until he was aware of the muscular resemblance between the known word and that read. My objection to this is that reading is put off too long; the habit should be formed before the child is old enough to prefer some other kind of entertainment—for all of this is fun if properly handled.

9. As all our knowledge of the outside world is gained through our senses, it is evident that well-trained or well-developed senses will give us correct ideas of things around us, and consequently we will respond to these things in a better manner than we would do if we had hazy or wrong ideas. This is easily illustrated by the deaf and the blind. They are assuredly handicapped. Because of the thought that the senses form the basis of our mental attainments, as well as physical, Dr. Montessori includes in (I might say forms her method upon) sense development. She believes that the concrete things come first—that imagination and other things will come just as soon and in far better order if the early impressions are correctly interpreted.

10. The difference between the result achieved by teachers of the abnormal or handicapped child and the teacher of the normal child using the Montessori method is vast. The reason for this difference, Dr. Montessori claims, is that special sense training enables the abnormal child to be educated, while it enables the normal child to educate himself. That is to say, a teacher must follow up the open-

FIG. 6. DISTINGUISHING SILK AND VELVET, SATIN AND CLOTH, ETC. (SEE PAGE 164)

ing made by the sense training in the case of an abnormal child, while with the normal child it is a case of auto-education. I wish to make plain that I refer to the educational value of effort and not to number-writing, etc. The law of self-activity works in the abnormal, but it works better and goes farther in the normal course.

11. This is the era of the child. We hear and see and talk of little besides him, and so it is no wonder that we turn to the discipline used in the Children's House. If a child does not behave properly, he is looked upon as ill (this is not far different from some religions) and the physician looks him over. He is treated tenderly and watched. If he is found to be in good health but simply naughty, he is seated at a table in the corner of the room facing the other children, and given his favorite toys—for there are many toys in the Houses of Childhood. It is seldom long before he desires to return to his companions, and so the aim has been accomplished, for surely the end of punishment should be the adjustment of the child to his surroundings. When he feels an inclination to respect the liberty of others, he is ready to return to the little community.

12. The great factor, after all, in the active instruction of the children is suggestion. Things are placed within their reach, they are in the atmosphere of refinement, and their motor inclinations are not restrained. They have all their natural desires guided into the proper channel, and it is little wonder that they in turn are sensitive to suggestion, either spoken or implied.

13. As far as there being little or no teaching done, I am free to confess that I believe a great mistake has been made by many who state this. The most scientific teaching is going on all the time, for THE CHILDREN TEACH EACH OTHER. Have you never noticed how a child loves to learn something from another child? (I use the verb to love because I mean it—not to like.) I have in mind now a scene in my own school, after

FIG. 7. MUSCLE SENSE (BARIC SENSE) (SEE PAGE 164)

school hours, where Richard was all attention, quite as much interested as was his little schoolmate Eleanor. My own little daughter was seated on the floor saying "Fall," and the other two were reading her lips. There were other commands, and as we watched the children we saw them say things among each other which we, to understand, had to lip-read ourselves. And now we find that the children are our best teachers of lip-reading. Of course their ability is limited, but if you want a thing taught to a little fellow, just teach it to a larger child first; this usually "works" (fig. 2).

14. Not to tire the reader, I have endeavored to illustrate by pictures the various steps that are followed by Montessori, so far as we know them from her book. There is always to be remembered, however, that neither words nor pictures can express the unseen force emanating from the directress of a House of Childhood, and which sways the body and soul of every little child with whom she comes in daily contact.

That which is hardest for us to understand is how any method can be a success when the children are not forced to do their play or work correctly. It is yet to be demonstrated to the general public that a child should not be corrected if he does something wrong (I am here talking of the incorrect use of materials—not of wrong acts), but that the thing in question should be removed until the child is able to do it correctly. There is, however, no doubt that we should believe Dr. Montessori, for there is so much common sense in her method otherwise that we would be foolish to doubt this. It is due to the fact that we are astounded at the thought, rather than to doubt of her statements, that we shake our head and say, "I cannot let the child believe he did it well. I must try to show him how." We are told by Dr. Montessori that we must not tell him he has failed, but must remove the object until a more propitious time.

THE MONTESSORI MATERIALS AND THEIR USE

1. Frames—self-help. Children are also taught to set a table, and to do many other things, including the washing of dishes.

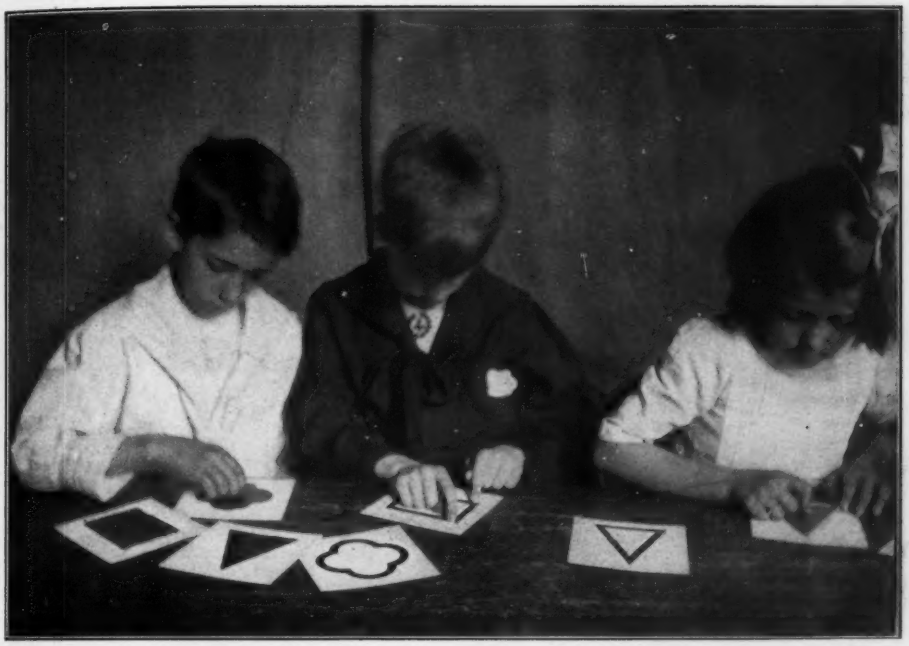


FIG. 8. ARRANGING THE INSETS UPON THE PROPER CARDS (SEE PAGE 166)

2. Cylinders.
3. Broad Stair.
4. Long stair.
5. Tower.

} Attention and dimension.

6. Development of the thermic sense; tactile sense. (Prepares for writing.)

7. Color—chromatic sense.

8. Tablets; muscle sense (baric sense).

9. Wooden insets (movement of hands—control. (Prepares for writing).

10. Cards. (*Prepares* for abstract signs of which writing consists.)

11. Metal insets. (The beginning of real writing work.)

12. Sandpaper letters.

13. Design: (*a*) Use of water colors; (*b*) free drawing from nature.

14. Composition of words, phrases, and sentences with the movable alphabet.

15. Number work, with the long-stair sandpaper numerals and sticks.

16. Spontaneous writing of words, phrases, and sentences.

17. Reading from slips of paper prepared by teacher.

It must be borne in mind that, while writing is learned early, so far as compared with the usual age at which children have heretofore learned to write, the actual written expression does not come until the fifth grade. (Dr. Montessori had divided the work into five grades.)

1. *Frames—Self-help.*—Frames which teach self-help are among the first materials handled by the child. They are hooks and eyes, "snappers," two kinds of buttons (one the regular pearl kind and the other those fastened on by tapes), shoe buttons, leather lacing, cloth lacing, and bows. The children learn to do and undo these, thereby gaining control of their muscles, and before long they apply this knowledge to the doing and undoing of their own garments. The teacher does not need to tell them. Self-care—which of course includes neatness, washing and brushing the hair and teeth—follows these frames. Our American frames should contain a garter-fastener,

FIG. 9. METAL INSETS TO TEACH CONTROL OF PENCIL AS A PREPARATION FOR WRITING
(SEE PAGE 167)

such as children are always bothered with (fig. 3).

2. *Cylinders—for Attention and Control.*—There are three sets: (*a*) Those of equal length but varying diameter. They are taken out of the solid block, laid on the table, and mixed. The child feels a cylinder, then one of the holes, and finally places the cylinder where it belongs. This material is self-correcting, for the child will find at least one cylinder that has no place if he makes a mistake in replacing them in the block. Thick and thin are taught with the thickest and thinnest cylinders. The directress says, holding up the thick cylinder, "This is thick"; and, holding up the thin one, "This is thin." Continuing with the three periods of Seguin, she says next, "Show me thick," "Show me thin." Holding out the thick one, "What is this?" Then, holding out the thin one, "What is this?" In each case she expects the child to answer. (*b*) The second set of cylinders varies both in height and diameter, while (*c*) the third set varies in height only. In all cases the work is made more difficult by blindfolding the child (fig. 4).

3. *Broad Stair—for Attention and Dimension.*—The Broad Stair is more difficult. The arrangement is easily seen from the picture. It involves sight. This also is done blindfolded at a later period. Thick and thin are taught with the thickest and thinnest prisms. The Broad Stair is dark brown in color (fig. 1).

4 and 15. The manner of playing with the Long Stair (which is red and blue) is the same for little children as that of the Broad Stair; but long and short are taught with these. The child is very apt to find it difficult to properly arrange the Long Stair. No numbers are used until later in the work, but to avoid repetition I have added them in this picture. One of the things done is the teaching of numerals. The directress takes up a rod and says, "This is rod number one." Then she picks up a rod with two di-

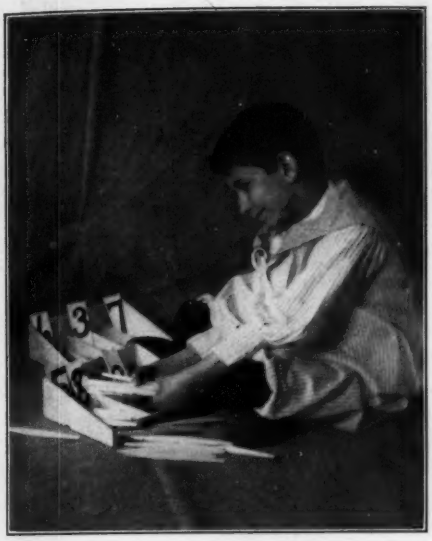


FIG. 10. NUMBER WORK

visions and says, "This is rod number two," and so on. For several times she calls the rods by their full names ("rod number"), but gradually she calls them "number two," "number three," etc., and finally just "two," "three," etc. Thus she prepares the child for the question, "How can you make nine as long as ten?" The child places "one" at the end of "nine," and both together are found to equal "ten." And so she teaches the various combinations. At the end the child knows how to add, divide, multiply, and subtract. For much of this work little boxes are used, and sticks so constructed as not to roll off the table are made to serve the purpose of counters. The child is taught how to write the numerals in the same manner as he is taught how to write (fig. 10).

5. *The Tower and Development of the Thermic Sense.* (The latter is the first direct step toward the preparation for writing.)

When the tower is built it looks much like our old friend the nest of blocks. The children are taught to build it first by sight, then by touch. Large and small are taught with these cubes, which are painted pink. The children delight in knocking them down, and in carrying the whole tower, when built, from place to place (fig. 5).

WRITING

6. *Development of the Thermic Sense.*—The children are taught early to wash their hands in warm water and then to rinse them in cold. They also feel little bowls in which water of varying degrees of heat and cold is placed.

Development of the Tactile Sense.—The directress has a smooth board. Part is covered with a piece of sandpaper. Over this she rubs the child's index finger, saying "Rough" (he won't like it a bit), and then, going to the smooth part, "Smooth." After doing this several times she has the child repeat the words after her, then alone. Then she says, "Show me rough," and "Show me smooth," and so on with the periods of Seguin. The next board has strips of sandpaper, and the same method of teaching is followed. "Rough, smooth, rough, smooth, rough smooth," says the directress, as she feels first a rough place, then a smooth, then a rough, etc. (fig. 11).

The child is also taught to distinguish

FIG. 11. TACTILE SENSE—ROUGH AND SMOOTH

FIG. 12. SANDPAPER LETTERS (SEE PAGE 167)

between silk and velvet, satin and cloth, and so on (fig. 6). This work, while much like that used in schools for the deaf, is easier, as the child has two sets or pieces of goods. Each set is arranged in a little case with drawers. The child first matches them in pairs—all the velvets, the two silks, and so on. Then she is blindfolded and matches them in pairs by touch. This differs from our work, as we usually require a child to remember the feeling of a piece of material and be able to pick it out from among many others. The idea of pairing is excellent. If the child makes a mistake, she can at once correct it if the bandage is removed, because she has done the work by sight.

7. *Chromatic Sense Development.*—What a delight these two boxes of colored silk bobbins are! They are made of wood, and are wound with silk. There are two sets of these, also. Each set is in a neat box. There are sixty-four bobbins, being the shades and tints of eight colors. At first the child is allowed to arrange them, one color at a time, the lightest bobbin at one end of the line and the darkest at the other. As he becomes more familiar with the colors and can discriminate more surely, he is sometimes shown one bobbin, and then required to go to another part of the room, select the mate to it from the other box, and bring it to the directress. A kind of old maid may be played with these color bobbins, as well as many other interesting games. The children enjoy every minute so spent.

8. *Muscle Sense (Baric Sense).*—Tablets of wood of different weight and appearance are packed in boxes (fig. 7). The contents are emptied onto the table and the child separates each kind into a little pile by itself. This he does, using both sight and the baric sense. Later he is blindfolded and does this by the baric

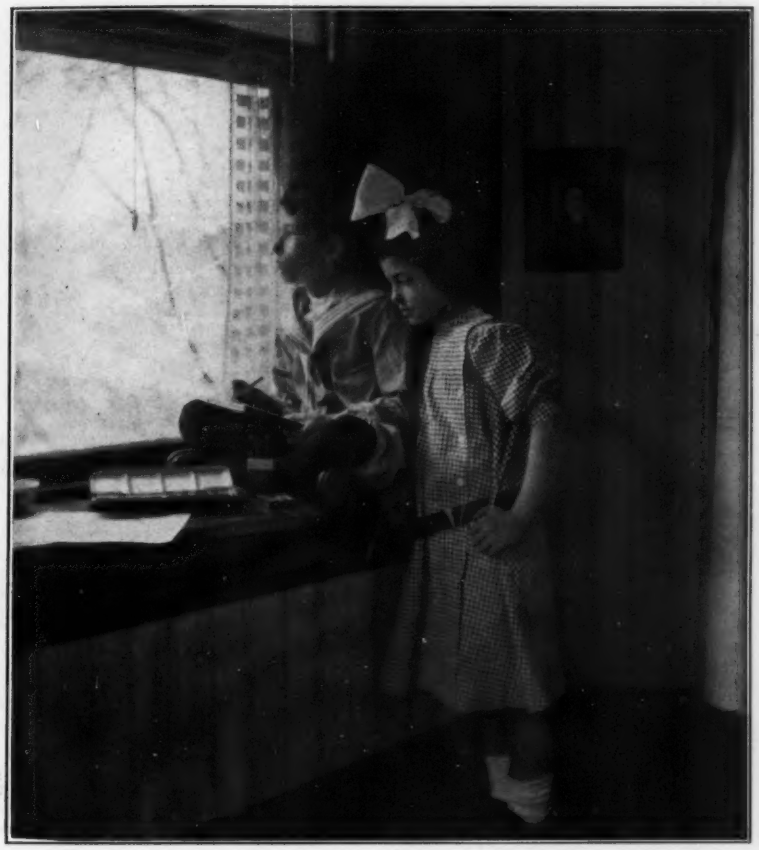


FIG. 13. WATER COLOR AND FREE DRAWING FROM NATURE (SEE PAGE 167)

sense alone. He picks up two and, weighing them carefully in his hands, places each in its own group. Heavy and light are also taught with these tablets.

9. *Wooden Insets—to Teach Movement of Hands—Control.*

Wooden Insets.—These come in a case similar to that containing the pieces of goods for tactile work. They consist of square pieces of wood in their natural color, but varnished (these are termed "frames"), with designs cut from them and colored blue (these are called "insets"). They have a little brass knob by which they may be handled. A holding frame comes with the set, for holding six of the insets and their frames, and there are some blank pieces of wood, which make it possible to have only two or three insets in use if desired. The insets and their frames are placed in the holding frame, the insets are removed and mixed, and the child is invited to replace them where they belong. This is done by sight and by touch. The child learns from these insets and frames to recognize forms.

10. *Cards—Prepare for Writing.*—There are three series of cards: 1. Those upon which are mounted the designs (cut from blue paper) the child has had before. 2. Cards upon which are mounted the figures, but in contour of one centimeter in width. 3. Cards upon which the designs are drawn in black outline only.

(1) The child loves to arrange the insets upon the proper card on the table

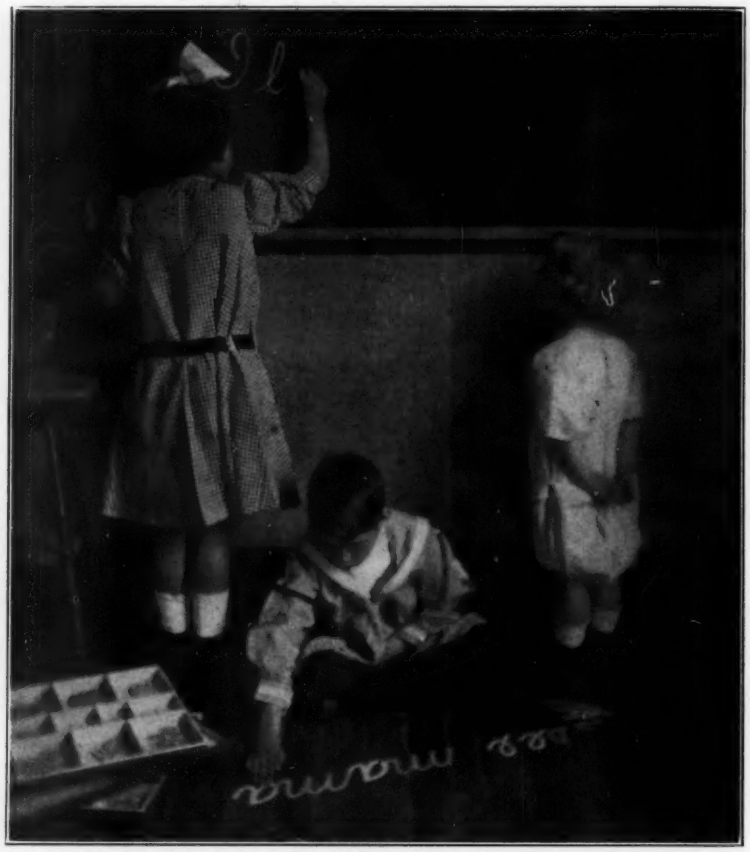


FIG. 14. MOVABLE ALPHABET AND SPONTANEOUS WRITING (SEE PAGE 167)

after they have both been mixed. He touches the contour of the mounted figure before placing the inset on it, and also afterward. He is thus learning to associate the plane figure with the solid inset (fig. 8).

(2) The use of the second set of cards is interesting. The child is given the insets and allowed to see the resemblance between them. He traces the design upon the card with his finger, following the blue outline. He is gradually going from the concrete to the abstract, but he is also doing that which his previous handling of the insets has made easy. He has run his finger around the edge of the wooden insets so often that he has a good muscular image of them, and when he traces the wide path on the card he is not making a line or following a line, but really tracing the path his finger makes. The movement is familiar, because old.

(3) The third series of cards takes the child to the line; but here, too, it is the result of a movement. The child places the wooden insets upon the figures outlined in black, and while he passes completely to the abstract, the line, to him, is the result of a movement.

THE BEGINNING OF WRITING

11. *Metal Insets.*—(The aim of this work is to teach control of pencil.) These are similar to the wooden insets. Two little table desks come for use with them. The child places a piece of paper on the desk and over it puts the metal

frame (which is colored brown). He then draws with a colored crayon of his own selection around the inside of the frame, where the blue inset belongs. This produces a figure as shown in front of the child at the left. Then he picks up the blue inset, places it upon the figure already drawn, and with another color draws around the outside of the inset. This makes a figure with a double outline. This is hard to see in the picture, but the little girl in the illustration has done this and the paper rests on the table in front of her frame. The next step is to fill in the figure so drawn, *and upon the child's ability to keep within the boundary line of the figure, and upon his ability to make parallel lines, depend his fitness for real writing.* In other words, the child is taught how to hold his pencil and how to guide it before he is taught to write real letters (fig. 9).

12. *Sandpaper Letters.*—(Sounds of letters, not names, are taught.) The pupil is shown cards on which are pasted letters made of sandpaper. The consonants are of black upon white cards, and the vowels are of light sandpaper upon dark cards. The directress slowly runs the child's finger over the letter—shows him how to trace it—saying, "This is '*o*' and this is '*f*.'" (In English we would have to use "*th*," "*ow*," etc., but the method is possible.) She is careful to teach him the correct way to trace the letter. Thus she establishes the tactile, muscular, visual, and auditory memory of the letter, for the child repeats the sounds of the letter after her and then alone, and she uses here as well as elsewhere the three periods of Seguin. Next the child traces the letter and says the sound alone, and then blindfolded he is able to trace and give the sound of the letters. When he has reached this point he is on the fair road to success. Do you notice the elements of interest that may be introduced (fig. 12)?

The pupils are also taught designs, for after all what is writing but designing letters? This consists of (*a*) use of a water color, (*b*) free drawing from nature. The child is allowed to express his ideas in his own way. At first his drawings will be very crude and often must be labeled, but as he develops they become more and more exact, and are all kept as a record of his general development (fig. 13).

13. *Use of Water Colors and Free Drawing from Nature.*—And now, being able to give the sounds of a number of sandpaper letters, the child designs words with the movable alphabet, in which the vowels are blue and the consonants pink. He *really* designs words, phrases, and sentences.

14. *Movable Alphabet and Spontaneous Writing.*—The directress says to him, "Mama," for instance, very slowly—very, very slowly, indeed. He repeats it after her, and, before he can realize, he has found that the sound of "*m*" and the sound of "*a*," with which he is already very familiar, make "ma," and of course the second syllable is sounded just the same. Then he discovers that he knows how to compose words. His delight knows no bounds as he places the cardboard "*m*," and so on, on the carpet, spelling out "Mama." He soon learns to construct easy words, such as "me." I am here stating the thing that a child must do in English. In Italian the words are pronounced nearly as spelled, so it matters not how long and seemingly difficult the words are. They must, however, be spelled phonetically at first. Here we can see the application to the hearing child of the Yale charts, both for composing words and sentences, and for the sandpaper letters. But to return to the child who has learned to compose words. To be able to place there on the floor, in letters, the words he can hear and say is almost too much for the little one, and from now on he composes words and sentences without limit (fig. 14).

15. *Spontaneous Writing.*—Then comes the spontaneous use of all the visual, tactile, motor, and auditory images that the child has been accumulating all these months. On the floor are certain letters with which he is perfectly familiar. He can see and feel them. He knows their

meaning literally "with his eyes shut"; and, moreover, he can hear them. What wonder, then, that he, who has so freely expressed his ideas of his surroundings with pencil, crayon, and brush, and who is already used to tracing letters, should suddenly determine, of his own free will, to duplicate on the blackboard the letters which he sees on the floor—the letters which he knows stand for sounds?

Surely Dr. Montessori has based her method upon scientific principles. The very best proof of its success is the large number of children who have learned to write of their own volition—when they are ready. If the child does not write soon (a week) after he has learned to control his pencil, (1) by keeping within the design he has drawn, (2) by making parallel lines when filling in a design, (3) and when blindfolded to recognize and give sounds of some of the sandpaper letters of the alphabet, and (4) to form words and sentences with the movable alphabet, the directress encourages him to write; but some children do not learn quickly even then, and some never learn to write before leaving the Children's House for the public school, which is at seven years of age.

We cannot judge of the work of these schools, but we can in a few years judge of this wonderful system of writing, for there will be many teachers who will not be frightened away by the statement that children are taught by Dr. Montessori to read and write in six weeks or less. They will know that the preparatory sense development had done much toward making the child ready to receive the direct training for writing, and that any line which is not straight is easier to make than a straight one. They will realize that any method which makes a game of filling in designs, but at the same time introduces the control of the instrument of writing, is superior to that deadening drudgery which, to secure a similar control, was necessary in bygone years. It took pages of copy-book work to make as many lines as is done in filling in one design—and the latter is fun. The children like this work so well that even after they have learned to write they continue it, thus perfecting their penmanship.

All praise is due to Dr. Maria Montessori for the Children's Houses established in the city of Rome for the uplift of the starving, helpless, homeless children, whose only abode was in darkness.

A BIRD-MAGICIAN

IN SOME parts of Europe the tourist may have a little bird called the siskin pointed out to him by a peasant, who says: "That bird practises magic. When he builds his nest, he puts into it a certain stone which makes it invisible. Any one who could find this stone in a siskin's nest would also be invisible as long as he carried the stone in his pocket. When I was a boy I used to watch for the siskins building their nests, and whenever I saw one I would climb the tree to get the stone; but the nest had always become invisible before I could reach it."

It is quite true, as the peasants say, that you may see a siskin busily making its nest, and yet, when you crawl out on the very same branch where he was at work, you cannot find the nest at all. But there is no magic in the siskin's methods of building. He simply makes his little home of material whose color exactly matches its surroundings. Generally he hides his nest in the branches of a fir-tree, from which the long tufts of lichen hang like an old man's beard. The nest itself is a small, round structure, and when covered on the outside with lichen and built to nestle close among the drooping lichen growths of the fir-tree it cannot be seen at all from below. Even when one crawls out on the limb from which it hangs, oftentimes he cannot find the nest, because it is so perfectly concealed by a branch as to escape notice even at close quarters.

So the siskin's magic is not the magic of charms and talismans, but the magic which has accomplished all the wonders that man himself has been able to perform—the magic of hard work and taking pains.—F. K. Noyes.

TIN TIN AND HER BROTHER

BY MRS. IDA B. ELLIOTT

NEXT door to the Girls' School of the American Baptist Missionary Society in Kemmendine, Burma, lives a little girl named Tin Tin, who is believed to have been born deaf and who is not able to converse with her lips, but able to read the lips of her playmates. She has a little hearing brother who was sent to the kindergarten when only three years of age. Tin Tin, then twelve years of age, accompanied him to school every day and sat patiently on the floor beside his little chair, helping him to arrange the blocks, colors, and cards, taking care of his slate and pencil, keeping his sturdy little body in line when marching, and in many ways proving a helpful assistant to the teacher. The latter was surprised at the many clever, sensible ways this little deaf girl possessed, how almost intuitively she would solve problems in arithmetic that sometimes puzzled older pupils, and how neatly and correctly she would correct the compositions the pupils would bring to her. How was she able to do this? Because she had learned to read and write Burmese, the language of her home, by imitating the other pupils and by her natural aptness in understanding object-lessons. She was never taught to speak because no one knew how to teach her, and as no one had any knowledge of the sign-language or of the finger alphabet, she knows nothing of either.

The language of her home and of the lower standards in school is Burmese. There are tribes in Burma having no written language and for whom the English characters are used in spelling their sound equivalents, but this has not been done in Burmese, as their language is derived directly from Pali and from Sanskrit, and has its own system of characters and sounds—almost "unspellable" in English.

During the three years that her brother attended the kindergarten, little Tin Tin was not only his faithful attendant, but a helpful sister to each member of the class. And when her brother was promoted to the first standard, gentle Tin Tin went with him, and again proved a valuable assistant to the teacher. On one occasion when the teacher wanted to give oral tests in geography to a restless class of little boys and girls, she wrote problems in arithmetic on the blackboard to be solved by the other pupils. As she finished doing so, she was called from the room and directed Tin Tin to preside during her absence. This the little deaf girl did with such delightful dignity that the pupils forgot their restlessness, busied themselves in solving the problems, and then, one by one, took their slates to Tin Tin to be passed upon and duly marked.

But a sad day came for Tin Tin and her brother, for their mother passed away into the great beyond, and their father, a wealthy man, who wanted to show great honor to her memory and thereby win great merit for himself, planned a large, showy funeral. He had the street decorated for a square, a stage was erected, musicians and actors engaged, and for eight days and nights tremendous crowds of people were fed by caterers and entertained by theatrical performances—every one receiving gifts. The large brass Buddha in their home received constant offerings, incense and candles burned night and day, and all was done that her soul might approach Nirvana—for, of course, no woman can enter the dreamless sleep. But how was the little brother, then seven years old, affected by all this? Did it bring any comfort to his saddened little heart? No; he had learned in school that the Buddha of brass could bring no help, so he told his father he would not accompany him to the pagoda any more to make offerings and say prayers there, but he would pray in the school and when alone to Jesus, who was near and could hear.

FRESH AIR

BY WARREN ROBINSON

NOWADAYS the term ventilation, in a historical as well as scientific sense, expresses more than ever before the efforts of man to recover that priceless heritage, pure air, which was his before he got into the habit of living in houses. All attempts toward that end indicate the revival of the consciousness of a lack of something of which he has been deprived by artificial conditions of present-day life, and a determination on the part of the laws of his being to reassert their supremacy.

The fresh-air crusade had its inception largely in the collection of a "fresh-air fund" to give city babies and children the advantages of a short respite in the country during the hot summer months. That experience gave every one concerned an opportunity to note the wonderfully hygienic effects the pure country air had on the young ones, and with it originated all sorts of current phrases expressive of different phases of the movement. Nor is it confined to us humans, but comes in as a serious consideration in connection with the housing of domestic animals as well.

Fresh or pure air is simply air as it comes direct from nature's laboratory, untainted by the odors of decaying vegetable or animal matter, inorganic or organic dust, respiration, perspiration, etc. In recent years the tendency has been to do as much of everything out of doors as possible, as that is the only sure way of obtaining all the fresh air needed. Stadiums that are being erected in various parts of the country, open-air theaters, open-air schools, and the practise of sleeping in tents and on porches, are examples of the results of this tendency. A practise similar to the last was not unknown to the Greeks, upon whom the benefits of open air speak for themselves. The time may yet come when the present methods of constructing gymnasiums will be completely revolutionized. If children can study in sedentary fashion in the open-air schools at a temperature of 40 degrees Fahrenheit, what is there to prevent those engaged in active physical exercises from being comfortable at even a lower one? But it must not be inferred that only cold air is pure. Warm air may be just as pure as cold air. The quantity of fresh air needed by individuals is something amazing to the layman. For example, those who know tell us that a child, to be properly supplied, should have about two thousand cubic feet an hour.

FRESH AIR, AND PLENTY OF IT

So far as outdoors is concerned, the securing of fresh air is easy enough; but when it comes to dwellings, school buildings, gymnasiums, shops, mercantile and manufacturing establishments, the aspect of the question is completely changed. Since ventilation is, according to Bergey, "the continuous introduction of pure air into a room or building, thoroughly mixing it with the contained air, and the simultaneous extraction of a like quantity of impure air," and the fact that upon it depends the even distribution of heat, it will at once be seen what a difficult problem is presented for solution.

To Benjamin Franklin, perhaps—"who was the wonder of Europe as well as the glory of America"—more than to any other man, not only belongs the honor of first grasping the true significance of the relation of fresh air to physical and mental well being, but hitting upon one of the most natural ways of introducing it into buildings; that is, through the open window, and to this day many authorities still hold that the open window is the best means of ventilation. The New York *Medical Journal* quotes Leonard Hill, an English authority, as admitting that the problems of ventilation have not been mastered, either in theory or practise, and that "with the most elaborate

systems there not infrequently appears to be a decided lack of fresh air." In "Carpenter's Heating and Ventilation of Buildings" are a series of experiments, showing how the air is distributed. When the inlet is on the side near the top and the outlet in the bottom, near the center of the room, the best results in distribution are attained. One trouble is the production of draughts. To prevent these is to make the movement of the incoming air slow and gentle by breaking up the current as much as possible by subdividing the openings of both inlets and outlets.

But in this brief paper no pretense is made to a scientific exposition or discussion of ventilation. Its object is to emphasize the importance of fresh air, and plenty of it, in both school-room and shop. The true teacher seeks not only to know how to teach, but to discover, also, under what conditions his work is apt to bear the most fruit. Nowhere is the necessity of good ventilation greater than in the school-room, where there are so many growing children, or is the air more quickly vitiated. In respiration, weight for weight, children give off about twice as much carbon dioxide as adults. While it may not be advisable to keep the windows of a school-room open sufficiently long to provide all the ventilation necessary, it is a good plan, during recreation time, to throw them open, in order that the air may be as effectually renewed as possible. This, at least, is the substance of the advice of a medical writer with regard to all public school or other buildings that are presumed to be ventilated by means of air ducts and forced draughts.

WARM ROOMS HAVE KILLED MORE PEOPLE THAN EVER FROZE TO DEATH

It has been the observation and experience of the writer that school-rooms are generally kept too warm; or, if not that, unequally heated, and one state is as bad as the other. To be perfectly comfortable under working conditions, where the children or young people are in good health and sufficiently clad, it is hard to see why the temperature should go above 68 degrees. In shops the degree is not so easily determined, but between 60 and 65 degrees ought, on the whole, to be adequate. For obvious reasons, temporarily sick or ailing children should not be allowed in school or shop. It has been said that "warm rooms have killed more people than ever froze to death." Too warm rooms, like too much clothing, always render the subject less able to resist exposure to cold.

Another thing that must not be overlooked is that fresh air, from becoming a health remedy, is now recognized as the best "speed boss" known, in that it invigorates, enabling the same person to perform more and better work in the same length of time. Rich, red blood is the basic principle of sustained and effective labor, whether of body or mind, and without fresh air this is impossible. Napoleon is reported to have refused to appoint a general with a small nose on his staff, on the ground that it did not permit of sufficient air to clarify his brain.

The foregoing remarks would be incomplete without a word about cleanliness. In fact ventilation and cleanliness are inseparable. Few things affect the air of a room more than the presence of matter or gases out of place. Personal cleanliness is to be sedulously cultivated, the rooms neatly swept with a dust-layer and dusted with a damp cloth, defective plumbing guarded against, and expectoration strictly forbidden, either in the buildings or on the premises, for in all these things lurk the deadly germs of disease. We cannot all be doctors, but we can all practise cleanliness, which is declared to be the first demand today in the work of the physician.

Has the thought ever come to you that from a purely productive point of view, the best qualified teacher easily and quietly accomplishes twice or thrice as much as the average teacher in the same grade? Because it is a profession, each receives the same pay. Were it an industry in which piece work practise prevailed, the increased product and its finer finish would insure twice the wage paid the average worker.

PHONETICALLY WRITTEN STORIES IN THE MELVILLE BELL SYMBOLS

Spring

The alder by the river
Shakes out her powdery curls;
The willow buds in silver
For little boys and girls.

The little birds fly over,
And oh, how sweet they sing!
To tell the happy children
That once again 'tis spring.

The gay green grass comes creeping
So soft beneath their feet;
The frogs begin to ripple
A music clear and sweet.

And butterflies are coming
And scarlet columbine,
And in the sunny meadows
The dandelions shine.

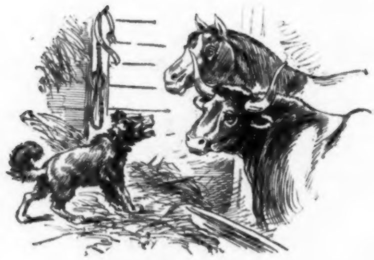
And just as many daisies
As their soft hands can hold,
The little ones may gather,
All fair in white and gold.

Here blows the warm red clover,
There peeps the violet blue;
O happy little children!
God made them all for you.

—*Celia Thaxter.*

"Awake!" Said the Sunshine.

"Awake!" said the sunshine, "'Tis time to get up;
Awake! pretty daisy and sweet buttercup;
Why! you've been sleeping the whole winter long!
Hark! hark! don't you hear? Tis the blue bird's first song."



PROGRAM FOR THE PROVIDENCE MEETING

THE Ninth Summer Meeting of the American Association to Promote the Teaching of Speech to the Deaf will open Tuesday evening, June 25, at the Rhode Island Institute for the Deaf, 520 Hope street, Providence, Rhode Island.

His Excellency Aram J. Pothier, Governor of Rhode Island, will deliver the address of welcome, after which a reception will be held.

Sessions of the meeting will be held from 9 a. m. to 1 p. m., beginning Wednesday, June 26.

The hour from 9 a. m. to 10 a. m. each day will be given to Demonstration Work with classes.

The hours from 10 a. m. to 1 p. m. will be devoted to lectures by prominent educators, papers, discussions, and conference work.

A full program will be issued by the committee in a short time. Following is a partial program:

Wednesday, June 26.—9 a. m., Demonstration Work: Classes from the Rhode Island School. 10:15 a. m., President's Address: Dr. A. L. E. Crouter. 11 a. m., Lecture on Visible Speech: Dr. Alexander Graham Bell. 12 m., Conference on Speech Work.

Thursday, June 27.—9 a. m., Demonstration Work: Classes from the Rhode Island School. 10:15 a. m., Lecture, The New South: Prof. William MacDonald, Brown University. 11 a. m., Lecture on Visible Speech: Dr. Alexander Graham Bell.

Friday, June 28.—9 a. m., Demonstration Work: Classes from the Rhode Island School. 10:15 a. m., Lecture, The Psychology of Childhood: Dr. Arthur Holmes, Department of Psychology, University of Pennsylvania, Philadelphia. 11 a. m., Paper, Bruhn Lip-reading System: Miss M. E. Bruhn, Boston. 12 m., Conference on Reading.

Saturday, June 29.—9 a. m., Demonstration Work: Classes from the Rhode Island School. 10:15 a. m., Lecture, The Importance of Stated Aural Examinations in Schools for the Deaf: Dr. Clarence J. Blake, Boston. 11 a. m., Paper, A Course of Study with Relation to Mental Ability: Mr. Harris Taylor. 12 m., Questions answered by Dr. Alexander Graham Bell.

Sunday, June 30.—Afternoon session devoted to "Sunday in Our Schools." Reminiscences of Early Days of Speech-teaching: Miss H. B. Rogers, Mr. F. B. Sanborn, and others.

Monday, July 1.—9 a. m., Demonstration Work: Classes from the Lexington Avenue School, New York. 10:15 a. m., Lecture, The Public's Children and Civic Progress: Walter E. Ranger, Commissioner of Education, Rhode Island. 11 a. m., Paper, The School Garden: Miss Jane S. Worcester. 11:30 a. m., Conference on Language.

Tuesday, July 2.—9 a. m., Demonstration Work: Classes from the Lexington Avenue School, New York. 10:15 a. m., Lecture, The Montessori Method: Mr. Carl R. Byoir, President "The House of Childhood." 11 a. m., Business Meeting of the Association.

HISTORICAL PILGRIMAGE

Some members of the American Association to Promote the Teaching of Speech to the Deaf have expressed a desire to visit, after the Summer Meeting at Providence, some of the historical places in Massachusetts.

The following is suggested as a provisional itinerary:

Tuesday, July 2.—Afternoon: Providence to Plymouth.

Wednesday, July 3.—Plymouth: To Boston by boat.

Thursday, July 4.—Boston.

Friday, July 5.—Lexington and Concord (probably by automobile).

Saturday, July 6.—To Gloucester by boat, and trolley to Salem.

Sunday, July 7.—Salem.

Monday, July 8.—To Marblehead and then to Boston.

The cost of the trip will be between $25.00 and $30.00.

Those wishing a shorter trip may end the pilgrimage at Boston on Friday night.

Those desirous of taking the trip will please communicate with E. S. Thompson, care of *The Mt. Airy World,* Mt. Airy, Philadelphia, Pa.

Mr. Harris Taylor, Principal of the Institution for the Improved Instruction of Deaf-Mutes, New York city, General Secretary of the American Association to Promote the Teaching of Speech to the Deaf, and Superintendent of the Volta Bureau, Washington, D. C., has been invited to deliver the commencement address at Cumberland University, Lebanon, Tennessee, on June 5, and to accept from the University the honorary degree of Doctor of Laws.

Can you accurately locate the true dividing line between the competent and the incompetent, between the productive and the unproductive, between he who makes and he who mars?

Do you belong to the competent or to the credulous crowd?

THE AGE OF ENTRANCE

BY HARRIS TAYLOR

SEVERAL times the Volta Bureau has been asked to give information in regard to the average age of entrance of deaf children to American schools for the deaf. In hopes of obtaining the desired information, a few months ago the Volta Bureau requested statistical information of schools for the deaf in the United States and Canada concerning—

1. The age at admission of all pupils present March 1, 1912.
2. The age at admission of all new pupils received from September 1, 1911, to March 1, 1912.
3. The legal ages of admission.
4. Compulsory education laws.

Replies have been received from forty-four schools with information concerning 3,482 pupils. Information from six schools, with a total of 848 pupils, is so indefinite that it cannot be included in the following tables:

TABLE I

Total Number of Pupils in School March 1, 1912

Thirty-eight Schools, with Total of 2,634 Pupils

Age of admission	No. pupils
2 years	0
3 years	18
4 years	59
5 years	179
6 years	288
7 years	522
8 years	454
9 years	273
10 years	252
11 years	143
12 years	98
13 years	87
14 years	90
15 years	35
16 years	31
17 years	21
18 years	17
19 years	10
Over 19 years	38
Unknown	19

TABLE II

New Pupils Admitted from September 1, 1911, to March 1, 1912

Thirty-eight Schools, with Total of 485 New Pupils

Age of admission	No. pupils
2 years	0
3 years	12
4 years	11
5 years	22
6 years	49
7 years	90
8 years	77
9 years	46
10 years	30
11 years	37
12 years	25
13 years	17
14 years	30
15 years	7
16 years	6
17 years	3
18 years	5
19 years	6
Over 19 years	9
Unknown	3

Information in regard to legal ages of admission and to compulsory education laws I have found too indefinite for tabulation.

Complete statistics concerning ages of entrance to schools for the deaf, I believe, would be of value to the profession, and I hope that in the near future statistics will be made public.

THE TEACHERS' BUREAU

DURING several years the Volta Bureau has been so successful in aiding to place teachers desiring a temporary or a permanent change in position, in helping superintendents, principals, and parents to secure the right teacher, supervisor, or assistant, and in encouraging capable young men and women to enter normal-training classes and prepare themselves for teaching deaf children, that it has become generally known and is usually referred to as the Volta Bureau Teachers' Agency.

All this has been done without charge, the Volta Bureau asking only the cordial cooperation of all concerned. If a teacher or a supervisor is desired, write to the Volta Bureau, stating exactly the kind you prefer, going very fully into details. If a teacher desires a permanent position, give all the information likely to be sought. All this information will be card-indexed and the applicant's name withheld if desired. Teachers are expected to notify the Volta Bureau when they have secured positions.

At the present time we have applications from eight male and twenty-one female teachers, from twelve normal students of one year's oral training, and one matron. In each case, unless otherwise stated, each applicant for a position is believed to possses the necessary training and experience to properly fill the

position sought, and all are hearing teachers, unless otherwise specified.

POSITIONS WANTED (MALE)

A. As principals or supervising teachers: Two oral teachers.
B. As teachers: Four oral teachers.
C. As private teacher: One oral teacher.
D. As instructor in manual training: One teacher.

POSITIONS WANTED (FEMALE)

E. As principals or supervising teachers: Three oral teachers.
F. As teachers: Thirteen oral teachers.
G. As teachers: Twelve normal students of one year's oral training.
H. As teacher: One deaf manual teacher of one year's experience.
I. As private teacher during vacation: One oral teacher.
J. As private teacher: One oral teacher.
K. As teachers of lip-reading: Two oral teachers.
L. As matron: One with several years' experience.

TEACHERS WANTED (FEMALE)

M. For combined school: One teacher of experience in oral and manual methods.

Information concerning any of these applicants will be furnished free upon request to the Volta Bureau.

A DEAF LITHOGRAPHER

PROF. WARREN ROBINSON forwards the following account of the experience of a graduate of the Milwaukee Day School for the Deaf, that throws some light on questions that must be taken into consideration by all deaf persons who contemplate earning their living in competition with the hearing. Professor Robinson states that it is presented practically as written:

"I am employed as a lithographic poster artist by the American Show Print Company. The firm does theatrical poster work; also printing. I first took up the work as an apprentice with this firm some four years ago, practically learning the trade with them, having had no previous experience, and am getting along as well as could be expected. The fact that I can speak is, of course, naturally an advantage to me, as the work is varied and requires more or less explanation before it is executed. Speaking from my limited experience, I cannot see why a deaf person cannot make a success of this trade, if he has the ability to do the work in an intelligent manner. The mere fact that he is deaf is no serious handicap; but there are other things to be taken into consideration. This is an age of competition, and in the hustle, bustle, and hurry most employers would not have the time to show an applicant how to do a thing. This means that he would have to know how, at least to a certain degree. Now suppose a deaf mute were to learn the trade as I did; that is, beginning as an apprentice, he would have to resort to a considerable amount of writing, and his fellow-workmen would have to do likewise in order to come to an understanding. This would entail a loss of time, which is equivalent to loss of money from the employer's point of view. Hence the disadvantage and the reason he would have to 'know how.' When I applied for the job I was asked if I could read the lips, to which I replied that I could to a certain extent, and they took me on trial and I am still with the firm. No doubt conditions are different in different places. Some firms are willing to teach an apprentice the trade if he agrees to pay a certain sum, say a hundred dollars or so, and work for the firm a certain length of time without compensation. But in my own case I started with small pay, which was gradually increased, in proportion to the progress made in my work, being at times obliged to do odd jobs outside of my regular work. I served as an apprentice for four years, which is the rule in the shop where I work, as all the artists employed in it are members of the Artists' Union, into which I was initiated a short time ago."

Reading the Baby's Lips *

I began to read her baby lips about the time she began to coo. In those days she sang a great deal, even as she does now, and at such times I would put my hand under her throat to feel the vibrations of her singing. On the way to town she sings, and passers-by smile at her. Sometimes in talking to me she does not use her voice at all, but I can even then notice the difference, and always tell her to speak out loud. At first I would then pretend that I really could hear a little, but I have found that she is too sharp to be fooled that way, so I have made her understand why she should use her voice every time she talks to me. "Lydia," I will ask, "did you use your voice?" "Yes, mamma," she answers, and then holds up her chin and says, "Feel my voice."

I wish you could see her say her prayers nightly. She clasps her small hands, bows her head, and from memory says, "Please make me a good baby. Please make me obey mamma." Then she puts her arms around my neck and kisses me "good night." It is such a *keen pleasure* to me to read her lips.

SUPERVISOR WANTED: An institution desires to secure the services of a female teacher capable of filling the position of supervisor of speech.

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*From the letter of a fond mother.

NATURE WORK

BY CAROLINE R. SMITH

NATURE work is a subject so important, so extensive, and so never-ending that teachers can each at best hope to add only a little to the sum total of the intellectual endowment of each child. This cannot well be done along the usual lines pursued in acquiring a knowledge of the three R's, nor in the manner that geographical and historical facts become mental acquisitions. It rightfully begins at the age when the child cries for the moon, and should be quite well developed by the age of mud pies.

The nursery, the kitchen, and the great out-of-doors are the most favorable places where each child may store up a fund of knowledge along this line before he is of school age.

In many instances the child does this at his own initiative, yet wise suggestions from mother and sister and brother cause the curious and observant to ask even more perplexing "whys" and "what fors." Pity the child who never annoys his elders in this way! He has never been fully awakened to his proper surroundings. He has groped aimlessly about, yet in contentment, giving as little thought to the work of Nature's handmaidens as the luxury-satiated guest at Delmonico's does to the labor which supplies its cuisine.

Blessed is the child who knows nothing of the shut-in life of the tenement or compartment home! Doubly blessed if he has brothers and sisters as companions, and thrice blessed if he possesses a mother who has never lost her child heart!

A fund of anti-schoolday nature knowledge is just as much the rightful privilege of the deaf child as that of his hearing brother; yet in a deplorable number of cases he comes to us with but a scanty fund. His affliction has been no valid excuse for the unpardonable neglect of suggestion and encouragement along the proper lines. There is no reason why he may not *see* a bird, though he is deprived of its song. He may feel the purr of the cat and ponder over the moo of the cow. Poverty, ignorance, selfishness, or indifference on the part of the parents is usually responsible for this condition. Is it any wonder that other mental developments come more slowly, and that sooner or later such pupils are placed in a class of their own kind?

Teachers cannot supply all of what many children have been deprived, but each in her turn can do much to stimulate each child to *observe* and *think* about what he sees.

Children love children and are fond of pointing out interesting features to each other. Where such intercourse is encouraged, more can often be learned than from their elders.

There are various means for the teacher to bring useful and interesting knowledge into the lives of children. An apple, a cat, or a flower will hold the attention for a few minutes—little incidental surprises from time to time—things which the child is not expected to write all about. We ourselves often have ideas which we cannot express for want of sufficient language.

We may walk to the orchard with the class some day in late fall or winter; we observe the bare branches and the fallen leaves. We go again in the spring just as often as we can; we find something new each time—the baby leaf, the bud, the blossom, and the hard green fruit. We return in the early fall, behold the greatest mission of that tree, and satisfy the senses. What speech, language, or arithmetic is necessary for this?

Few are the teachers who have not planted bulbs and slips in the presence of the children, often noting the date on the pot. Eagerly each day the soil is scanned for the first tiny promise of what is to be. Happy the one who makes the first discovery; and how diligently these infant plants would be deluged

each day if a few horticultural hints were not imparted. Cuttings from various plants may be put into water and set in a sunny window. In a few weeks they have put out rootlets and are ready to be planted. Their progress is a joy from day to day. The blossoms are prized for their beauty and fragrance, while the plants retain a personal interest for those who have planted and watered and waited so long for this reward.

A very interesting lesson in what one boy termed the "green-house man's secret" was observed in the propagation of the gloxinia from its leaf. The leaves were kept in a jar of water in a sunny window for several weeks. A little tuberous growth formed at the base of the stem. One poor leaf, having no stem and being split, sent forth its tuberous growth at the outer edge of a large vein. After some days these little tubers put forth tiny leaves while still submerged. Then they were carefully planted in soil mixed especially for them, and their leaves, buds, and blossoms were enjoyed before the end of the school year.

This lesson elicited the fact that our window boxes had been stocked by seeds, bulbs, tubers, and cuttings, as well as that certain plants thrive best in sandy soil, others in loam, while clay is quite necessary for many.

Forsythia in full bloom just after the Christmas holidays would seem marvelous to children familiar with it as heralding the spring had they not seen the apparently dead branches brought in a few weeks before and noted the swelling buds from time to time. This seeming miracle was easily understood, and the same pupils had less difficulty in answering such questions as "Why do oranges not grow in Pennsylvania?"

Pussy-willows, hepaticas, violets, Quaker ladies, and whatever else strikes the fancy of pupil or teacher find their place in the school-room, though very little time is devoted to them.

Children should be encouraged to bring leaves from different kinds of trees, in order to learn the names of the most familiar species. They may never know a white maple from a red maple, but they should be able to distinguish an oak from an elm. The spirit of "Apple-tree John" and the law of planting two where we cut down one should be encouraged.

The clouds, the snowflakes, frost and hail, sunrise and sunset, the ever-changing moon and stars, are only a few of the many interesting things which every normal child wonders about and wishes to have explained.

There is another phase of Nature which may appeal more strongly to some temperaments. There are the creeping, walking, hopping, swimming, and flying creatures, which possess such a varied interest to us all. At first we may perhaps rudely classify them as worms, beasts, bugs, fishes, and birds; but soon we find that the frog and the butterfly do not exactly come under these headings, and we are glad to ignore our first general classification.

We cannot bring so much of "living-moving Nature" into our school-rooms, but the few which can be brought cause the child to observe much in Nature's own school—the beautiful world around him.

We can all recall our childish faith and interest in the story of the butterfly. With what intense patience we have all watched and waited for the butterfly to crawl out of its cocoon—a thing which always happened during our absence. Lucky were we if we saw it dry its wings and quite content with the hole it left in the cocoon! What youthful visions of our own transformation into angels came to us!

What can be more wonderful to the child than that the ugly, slimy, stringy spawn from the stagnant frog-pond should change into pollywogs under our own eyes in the school-room! Clumsy little dark bodies which can swim and seem to subsist on nothing. They thrive, however, and great is the joy of him who discovers the first pair of legs that burst forth. In due time there is a second pair, and if school did not close in June

"Master Pollywog" would soon absorb his tail, take upon himself the name of toad, bid farewell to his aquatic home, and join his warty tribe of elders, quite well equipped to pipe, croak, eat parasites or bait-hooks—all unconscious of the fact that his higher stage of development has tabooed him forever from the sizzling pan awaiting his unfortunate ancestor, the frog.

Snails are an interesting study for children, and if we only had a rain-barrel how much we would enjoy watching the "pesky old mosquito" until set free by his last evolution! What lessons the ant and the bee can teach us, and what thrills our hearts as the sight of the first robin!

Every creature, be its station humble or exalted, is a child of Nature no less than we, and the greater our knowledge of things around us the more harmony we find in her beautiful home, the universe. With a very limited knowledge of Nature and devoid of the appreciation of rhyme, how can we expect a deaf child to sense the beauty of even so simple verses as—

"Each little flower that opens,
Each little bird that sings—
He made their glowing colors,
He made their tiny wings.
The tall tree in the greenwood,
The pleasant summer sun,
The ripe fruit in the garden—
He made them every one."

For older children, the "Childhood of Hiawatha" and many gems of poetry and prose have their charm only so far as their understanding goes.

Let Lillian chase the butterfly and Tommy learn that the bee carries a sting. Time will come when "bees" and "butterflies" of a different type need to be understood.

Some persons think that cruelty to animals is an instinctive part of every boy's moral make-up. Most often he is guileless as Parsifal and the possessor of a good, wholesome curiosity. Why should this not be? Are not all men "children of a larger growth"? We find men, as well as children, unable to discriminate where slaughter is justifiable. We eat the meat set before us with gusto, never thinking how we came to have it; but our appetites are taken away at the sight of a poor dying bird, ruthlessly maimed, fluttering before us.

"The sportsman counts his slaughtered trophies by the score,
With boastful pride extols his lust for hundreds more,
Yet says, 'My lady, dear, please think upon it:
Real birds were killed to deck your bonnet.'"

The beauty and the gladness of Nature are felt—not half expressed—by even our best pastoral writers. Reverence to her was once fittingly expressed by a young German doffing his hat to her as he paused in his walk to let his sensuous being revel in all her glory. The scientific, the ethical, and the utilitarian sides of Nature appeal to us most pleasingly. To this we might add the pestiferous side, which affect us quite differently.

For hygienic as well as economical reasons, the child should understand something about the noxious plants and animals with which he may come in contact. Many of our boys will till the soil, and then poison ivy, broom sage, caterpillars, and Egyptian moths will be more than names to them. Different States have realized and taken steps to avert the discomfort and danger to life and property caused by the Russian thistle, boll-weevil, mosquito, San José scale, and numerous other pests. We may exterminate every dandelion on our own lawn, but unless our neighbors do the same we shall have other crops *ad infinitum*.

The parent or teacher who earnestly desires to help the child need not ask, "Where shall I turn for necessary suggestions?" If her eyes are open she cannot run away from them. On all sides are Nature's products, many of them fostered by the brawn of man. The parks and the zoological gardens are full of the real things. The libraries and book-shops abundantly supplement all knowledge thus gained, as well as supply much that is new. Almost every

paper and magazine for children has pages or columns devoted to this line of work. Various publications for teachers give valuable outlines from season to season.

In recent years the homes of many children are over-supplied with toys and all manner of mechanisms to amuse them. Is it any wonder they talk only of Teddy bears and automobiles? The child may wind up his toy to make it run, but does he know a sparrow from a chipmunk? What toys and what games does he invent for himself? Is not every incentive for invention as well as construction taken from him? Could his imagination ever convert acorn cups into choice china, cornstalks into guns, or periwinkles into hens and chicks?

The interest which parents and teachers manifest in a child's knowledge, whether gained from Nature, print, or picture, is of incalculable value to him, though time alone can teach him that.

"The learned is happy Nature to explore;
The fool is happy that he knows no more."

THE HOME SIDE OF THE SCHOOL

BY CHRISTINE MAUZY

TO QUOTE the words of an able superintendent, whose interest in the education of the deaf extends over a period of more than thirty years, "A school for the deaf is threefold: it is a home, it is a school, where our pupils are given a literary education which prepares them for college, and it is an industrial training school for the teaching of trades, which enable our boys and girls, when they leave school, to become wage-earners and self-supporting citizens."

The home side of the school comes first in importance, just as the home must always come before the school with its influence in the molding of a child's character. We all say it is our aim to have our school as much like a refined Christian home as possible. We read this in all our school papers. It is a very pretty sentiment and looks well in print, but there is a wide difference between saying and doing, and I wonder how many of our schools come anywhere near reaching their aim. I know that many of them fall far short of the mark. Are we not somewhat like the poor sparrow in the nursery rhyme?

"His aim then he took,
But he took it not right."

Are we taking our aim right? Mr. Euritt covered the ground so carefully in the conference on "How to Make the School Homelike," at the Delavan convention last summer, that there is very little left to be said on this subject; but how many of us have applied his words to our own practise? Did we not rather return to our work last fall to continue in the same old ruts?

Every right-feeling superintendent wants his school to be as much like a home as possible; but, no matter how good his intentions are, he is powerless to make it so without the cheerful cooperation of his under-workers. Theirs is the immediate responsibility.

While a teacher can do much to add to the happiness of her pupils, and her domain should not be bounded by the four walls of her class-room, yet as a dispenser of happiness outside of school hours, she comes second to the matron, or house-mother, as Mr. Euritt calls her, for it is she who stands in the place of the mother and makes the home. For this reason a matron's place is no less important—if not, indeed, more important—than that of a teacher, and the greatest care should be taken in selecting a suitable person for this position. A teacher is responsible for her class only, but the matron is responsible for the health, happiness, and moral welfare of every child in the school.

It is a very erroneous idea—held, how-

ever, by a number of people—that any able-bodied woman will do as matron in a school for deaf children.

Mr. Euritt rightly says that "a college education and social accomplishments are not so necessary for this position as a kind heart, motherly sympathy, and patience without limit." To these qualifications we might add an unerring sense of justice, for any one who stands in authority over little children should be above all petty favoritism. And, though a college education is not necessary, she most certainly should not be an uneducated person; she must have some knowledge of hygiene, in order to look intelligently after the health of the children. Moreover, she should be a woman of refinement, if not culture, and possess in no small degree that indispensable quality, common sense. It is the little child, when he first enters school, and the intermediate boys and girls, who need the home environment more perhaps than our older pupils. They have, in most schools, their club-rooms or reading-rooms in which to spend their leisure moments, but what have our younger children? A play-room, but nothing to play with. The sitting or living-room, where the family congregate after the day's work is ended, is usually the most pleasant spot in the home. One step, then, toward making our schools more homelike would be the establishment of a sitting-room in each of the dormitories; that is, a sitting-room for the primary boys, one for the intermediate and one for the advanced, and corresponding ones in the girls' dormitories. Make these rooms as cheerful and homelike as possible, with attractive pictures, books, games, puzzles, and, for the younger children, toys.

There is nothing in life so pathetic as a toyless childhood. Because of a dearth of toys and lack of play-time, we are turning our children into little old men and women who have never lived in the fairyland of childish fancy.

It has been said that the deaf lack imagination. As to the truth of this assertion I am not prepared to say; but if it is true, I think it is largely due to the fact that we do not let fairy tales enter enough into their early education. Most hearing children know the adventures of Jack the Giant Killer, Beauty and the Beast, Cinderella, and others, before they can read; but when do our deaf children learn them? In most cases after they have passed beyond the golden age, in which all things are possible, and the stories lose half their charm.

It seems to me that in our zeal to impart knowledge we often overlook the importance that play should take in the education of a child. Many a boy gets into mischief, out of school hours, and is considered bad, for the simple reason that he has no outlet for his superfluous energy. Children need play as much if not more than they need work. Play is work, and work is play, in the best-regulated schools. A playground fitted up with swings, giant's stride, and horizontal bars adds much to a child's pleasure and health, and systematic, well-directed games are as great a factor in the mental development of a child as school-room questions.

MR. WILLIAM WADE.—It is with sorrow that we announce the departure to another world of this well-known philanthropist, whose earthly existence ended on April 22. From his beautiful home in Oakmont, a suburb of Pittsburgh, Pennsylvania, he kept in touch with blind and deaf children, sending them presents, aiding in affording an education, and doing what he could to promote their intellectual advancement. It is said that he maintained a voluminous correspondence with teachers of the deaf in all parts of this country, and in many foreign lands, and gradually he became interested in deaf pupils as well as the blind deaf.

Do you realize the importance of clear and concise expression?

Is that other way a better way than your way?

Slip-shod writing and success are strangers.

Never make a statement that will not bear the closest investigation.

Is your thinking machine growing rusty?

Are you making good?

"HEREDITY AND INTERMARRIAGE: FACTORS IN DEAFMUTISM" [1]

BY LINNÆUS ROBERTS

TO MARRY, or not to marry—that is the question especially confronting that portion of the human race known as deaf-mutes.

This paper is a brief inquiry into the results of such marriages.

A number of important questions naturally arise.

1. Is deafness hereditary?

This question is answered by one who has made a most exhaustive investigation, Prof. E. A. Fay, of Gallaudet College, and Editor of the American Annals of the Deaf.

Professor Fay says: "It is one of the laws of heredity that a physical anomaly or an unusual liability to certain diseases existing in the parent tends to be transmitted to the offspring. Deafness, it is true, is neither a physical anomaly nor a disease, and such expressions as 'transmitted deafness,' 'inherited deafness,' etc., are inaccurate and misleading. When the deafness of the parent reappears in the offspring, what is really transmitted and inherited is not deafness, but some anomaly of the auditory organs or of the nervous system, or the tendency to some disease of which deafness is but the result or the symptom."

Parents who are deaf may have a large family of perfectly normal children, and may take this as a token that the trouble in their family line has ended in themselves. But wait awhile. In the third generation there may be two, three, or more deaf children. The fatal tendency to deafness lurks in the family line.

Question number one is thus answered in the established fact that a physical anomaly which produced deafness in the parent is transmitted to the offspring, and *may* produce deafness again and it may not. It is a fact that a large majority of children born from deaf parents can hear, "which seems to accord with the law of heredity that the offspring tend to revert to the normal type."

2. Are marriages of deaf persons more liable to result in deaf offspring than ordinary marriages?

A table of statistics gathered from all parts of the United States and Canada includes 3,497 marriages, one or both partners being deaf. The number of deaf children is 300, or 8.579 per cent. There is no certain information as to the percentage of deaf children from ordinary marriages, but it is much less than 8 per cent—probably less than one-tenth of one per cent.

3. When the deaf marry, do they as a rule choose partners from their own class, or from the much larger class of hearing persons?

This is easily answered. I have no data to show what proportion of deaf persons choose hearing partners, but it is very small, and naturally so. State schools for the deaf have been in existence nearly one hundred years. Tens of thousands of pupils have been in attendance during these ten decades. Like the great mass of humanity, they are social beings, and, when brought together, nothing is more natural than that strong attachments should spring up.

Pupils of State institutions—which are large boarding schools—and those in day schools are divided into two general classes, viz., the congenitally deaf and the adventitiously deaf. In this inquiry we are not considering any outside of these two classes, because the records concern only those who have attended some school for the deaf.

These records disclose some very curious things. In a union of "like with like" it might be expected that with both partners deaf the liability to deafness in the offspring would be twice as great as

[1] Prepared for the benefit of those who do not have access to the records in reach of workers among the deaf.

with only one partner deaf, for in each case there would be two persons to transmit the physical conditions liable to result in deafness instead of only one person; but it appears from the experience tables that a smaller percentage of marriages resulted in deaf offspring when both parents were deaf than where one was deaf and the other a hearing person. Many attempts have been made to explain this apparently reversed action of one of the laws of heredity.

Dr. Alexander Graham Bell suggests that in a majority of such marriages the deaf partner was probably congenitally deaf, and the hearing partner as well as the deaf partner probably belonged to a family containing deaf persons. If we accept his explanation we are arraying two "probabilities" against an otherwise unexplained fact.

Mr. Sedgewick, an English writer on the subject of heredity, says that it may be owing to "excess having reversed the action of some natural law in development."

Mr. Darwin, in commenting on Mr. Sedgewick's suggestion, discouragingly admits that "in the present state of our knowledge it is safer to look upon the whole case as simply unintelligible."

4. Was Dr. Bell unduly alarmed when he put forth his "Memoir upon the Formation of a Deaf Variety of the Human Race"?

Dr. Bell is a very learned man. He has given an immense amount of thought and research to this subject, and we cannot in justice call him an alarmist. He is opposed to all marriages among the deaf; that is, of deaf with deaf. His theory is as follows: "If the laws of heredity that are known to hold in the case of animals also apply to man, the intermarriage of congenital deaf-mutes through a number of successive generations should result in the formation of a deaf variety of the human race."

If possible, let us imagine a situation that could bring about this result. Suppose somewhere on this planet there is a vale shut in by impassable mountain barriers, where a few families of congenitally deaf persons have taken up their abode. No hearing persons are permitted to enter this hidden vale, and as fast as normal children are born in the community they are banished to the outside world. For generation after generation deaf offspring of deaf parents marry the deaf offspring of other deaf parents, simply because there are no others to marry. It would not require many generations for Dr. Bell's pessimistic dream to be realized.

In this age of rapid transit, of telephones and wireless telegraphy, of trolleys, and automobiles, and aëroplanes, who *could* create an imagination so vivid as to be able to locate such a community in this busy world?

A very convenient classification of the deaf, based upon statistics from three of the average-sized State schools, is as follows:

	Pupils.
*Class 1. Family congenital—born deaf; deaf relatives	191
Class 2. Family non-congenital—not born deaf; deaf relatives	86
Class 3. Sporadic—born deaf; no deaf relatives	185
Class 4. Adventitious—not born deaf; no deaf relatives	667
Total	1,129

This is probably a fair average for the United States.

According to this record the adventitiously deaf comprise nearly 60 per cent of the entire number.

5. My last question, though by no means the least in importance, is, How may we advise the deaf in the selection of life partners?

Congenitally deaf persons should avoid, as far as possible, a union with those whose deafness is likewise congenital.

While there is much intermarrying among both classes, the records show that the adventitiously deaf—or, as we usually speak of them, the semi-mutes—prefer to a great extent to select partners within their own class. This arrangement leaves a large number of congeni-

*"Hereditary Deafness," by Harris Taylor American Annals of the Deaf, vols. 38-39.

tally deaf persons of both sexes with no recourse but to choose a congenitally deaf partner, or a hearing partner, both of which courses are inadvisable; or, on the other hand, not to marry at all. A considerable number of deaf persons choose a life of single blessedness for the simple reason that there are not enough semi-mutes to go around.

I believe that the agitation of the marriage question in all of its bearings has had a good effect upon the deaf themselves. They do not agree with Dr. Bell, but that he has set them to thinking there can be no doubt. They consider his opposition to all marriages among the deaf as an extreme position, and as a cold-blooded and heartless proposition more applicable to the breeding of live-stock than to the dignified duty of choosing a congenial life partner in marriage.

My life-work has been with the deaf, and I am accustomed to think of them very much as I do of persons having all of their senses. I am disposed to take an optimistic view of the outlook. I am sure that deafness is not increasing in proportion to the increase in population. In fact, I believe it is decreasing. With the "spread of intelligence and the progress of sanitary science," how could it be otherwise?

MARRIAGES OF THE DEAF

BY FRED DE LAND

THE subject chosen by Mr. Roberts in the preceding address is so interesting that it is a matter of regret that he should have fallen into the error of crediting Dr. Bell with statements he never made, and failing to credit him with the very sensible and acceptable advice he gave to the deaf, on the invitation of the deaf, on the subject of marriage.

Here are some facts. On November 13, 1883, Dr. Bell presented to the National Academy of Sciences, at the New Haven meeting, a memoir "Upon the Formation of a Deaf Variety of the Human Race." This memoir was later published by order of Congress. A representative of the Associated Press saw the volume lying on the desks of the Members of Congress, and hastily glanced through it. Perceiving that one portion contained a reference to the subject of compulsory marriage laws, he wrongly conceived the idea that it was a *memorial* rather than a *memoir*—a memorial praying for the adoption of laws to prevent deaf-mutes from marrying. And it was that erroneous conclusion that appeared in most of the newspapers throughout the country.

Dr. Bell's memoir was written for the information of the scientific men of the country, from the viewpoint of the scientist. Many deaf men fail to grasp its true value or to perceive the point of view from which the facts were set forth. Hence it appears to be easy for some of the deaf to accept the false press report, notwithstanding that Dr. Bell specifically states in the memoir: "A due consideration of all the objections renders it doubtful whether legislative interference with the marriages of the deaf would be advisable." [1]

Eight years after the presentation of his memoir, Dr. Bell was invited to deliver an address to the members of the Literary Society of Kendall Green, in Washington, on March 6, 1891.[2] In his preliminary remarks he referred to the pleasure "it always gives me" to respond to the invitations of this society, because you "come here from every part of the United States to receive in the national college for deaf-mutes that higher education which you cannot obtain in the

[1] Memoir "Upon the Formation of a Deaf Variety of the Human Race," p. 46.

[2] "Marriage: an Address to the Deaf," by Alexander Graham Bell, published in pamphlet form by the Volta Bureau, Washington, D. C. Copies may be obtained, without charge, by applying to the Superintendent.

States from which you came." Then, in part, he said:

DR. BELL'S ADDRESS TO THE DEAF ON THE SUBJECT OF MARRIAGE

"Now, I have considered what subject I could bring to your attention tonight, the consideration of which would be of assistance to you when you go out into the world, and there is no subject, I am sure, that lies closer to your hearts than the subject of marriage.

"It is a very difficult thing for me to speak to you upon that subject, because I know that an idea has gone forth, and is very generally believed in by the deaf of this country, that I want to prevent you from marrying as you choose, and that I have tried to pass a law to interfere with your marriages. But, my friends, it is not true. I have never done such a thing, nor do I intend to, and before I speak upon this subject I want you distinctly to understand that I have no intention of interfering with your liberty of marriage. You can marry whom you choose, and I hope you will be happy. It is not for me to blame you for marrying to suit yourselves, for you all know that I myself, the son of a deaf mother, have married a deaf wife.

"I think, however, that it is the duty of every good man and every good woman to remember that children follow marriage, and I am sure that there is no one among the deaf who desires to have his affliction handed down to his children. You all know that I have devoted considerable study and thought to the subject of the inheritance of deafness, and if you will put away prejudice out of your minds and take up my researches relating to the deaf, you will find something that may be of value to you all.

"We all know that some of the deaf have deaf children—not all, not even the majority—but some, a comparatively small number. In the vast majority of cases there are no deaf offspring, but in the remaining cases the proportion of offspring born deaf is very large—so large as to cause alarm to thoughtful minds. Will it not be of interest and importance to you to find out why these few have deaf offspring? It may not be of much importance to you to inquire whether by and by, in a hundred years or so, we may have a deaf variety of the human race. That is a matter of great interest to scientific men, but not of special value to you. What you want to know, and what you are interested in, is this: are *you yourself* liable to have deaf offspring? Now, one value in my researches that you will find is this: that you can gain information that may assure you that you may increase your liability to have deaf offspring or *diminish* it, according to the way in which you marry. . . .

"When we obtain statistics classified by both parties to the marriage, I think it will be found that where persons who were not born deaf and have no deaf relatives, marry persons who were not born deaf and have no deaf relatives, there will be no deaf offspring, or at least that the percentage of deaf offspring will be insignificant, for surely accidental deafness is no more liable to be inherited than the accidental loss of an arm, in battle, for instance. If, however, a person *born* without an arm should marry a person also born without an arm, some of the children would probably exhibit the same defect. In a similar manner persons who were born deaf, or who have deaf relatives (whether they were born deaf or not), exhibit a decided tendency to transmit deafness to their offspring.

"Now, there is a law of heredity that may afford great comfort to many of the deaf—the law of reversion. There is a very strong tendency in offspring to *revert to the normal type of the race.* It requires constant selection from generation to generation *on both sides* to perpetuate any abnormal peculiarity. There will always, therefore, be a tendency to produce hearing children rather than deaf, excepting in cases where *both* parties to a marriage come from families containing a congenital deaf-mute, or a number of deaf persons.

"PROBABILITIES FOR YOUR GUIDANCE

"Whatever may be the character of the deafness in your own case, you will probably diminish your liability to have deaf offspring—

1. By marrying a hearing person in whose family there is no deafness.
2. By marrying a deaf person (not born deaf) who has no deaf relatives, or a hearing brother or sister of such a person.

"On the other hand, you will probably increase your liability to have deaf offspring—

1. By marrying a deaf person (not born deaf) who has deaf relatives, or a hearing brother or sister of such a person.
2. By marrying a deaf person (born deaf) who has no deaf relatives, or a hearing brother or sister of such a person.
3. By marrying a deaf person (born deaf) who has deaf relatives, or a hearing brother or sister of such a person.

"Now, the point that I would impress upon you all is the significance of *family deafness.* I would have you remember that all the members of a family in which there are a number of deaf-mutes have a liability to produce deaf offspring—the *hearing* members of the family as well as the deaf members.

"This, I think, is the explanation of the curious fact that the congenitally deaf pupils of the Hartford Institution who married hearing persons had a larger percentage of deaf children than those who married deaf-mutes. It is probable that many of the hearing persons

they married *had brothers or sisters who were born deaf.*

"Cases will constantly arise in which a proposed marriage will appear undesirable and desirable both at the same time.

"For example, a semi-mute having no deaf relatives may form an attachment for a congenitally deaf person in whose family deafness may be hereditary. Of course I have nothing to say as to what the young people should do. That is a matter for them to decide. I cannot even undertake to advise.

"The semi-mute will have no tendency to have deaf children if he or she will marry a person of similar kind, or marry a hearing person belonging to a family in which there is no deafness. Hence this person, by marrying a congenitally deaf person in whose family deafness is hereditary, will create a liability to have deaf offspring which would not otherwise exist. From this point of view the marriage is undesirable.

"On the other hand, from the point of view of the person born deaf such a marriage is extremely desirable, for it will diminish the hereditary tendency in his family.

"In such a case the friends of one party would probably favor the union and the friends of the other advise against it; and the mutual friends of both could only say, 'It is desirable to one and undesirable to the other; we cannot advise; your own hearts must decide the matter.'

"Now, I have come before you tonight to show you that there may be something in my researches of benefit to you; I want, also, to assure you that there is nothing of harm. I want to disabuse your minds entirely of the idea that I intend or desire to interfere with your perfect liberty of choice.

THE IDEAL MARRIAGE

"I claim the right to advise you, as I would advise my own children, or any young people in whom I feel an interest. . . . You have to live in a world of hearing and speaking people, and everything that will help you to mingle with hearing and speaking people will promote your welfare and happiness. A hearing partner will wed you to the hearing world and be of inestimable value to you in all the relations of life. Not only will your own success in life be thereby increased, but the welfare of your children will be materially promoted. It is surely to the interests of children, both deaf and hearing, that one at least of their parents should hear.

"I would therefore hold before you as the ideal marriage a marriage with a hearing person. Do not let any one place in your minds the idea that such a marriage cannot be a happy one. Do not let any one make you believe that you cannot find a hearing person who will treat you as an equal. The chances are infinitely in your favor that out of the millions of hearing persons in this country you may be able to find one with whom you may be happy than that you should find one among the smaller numbers of the deaf.

"I think the sentiment is hurtful that makes you believe you can only be happy with a deaf companion. That is a mistake, and I believe a grave one. I would have you believe that the welfare of yourself and your children will be greatly promoted by marriage with a hearing partner, if you can find one with whom you can be happy.

"And now, my friends, I must thank you very much for the attentive way in which you have listened to me, and I hope that you will all dispel from your minds any idea that I intend to interfere with your liberty of marriage. I know that very grave misconceptions of my position and views have been circulated during the past few years among the deaf. I have before me tonight an audience composed of the brightest and most intelligent minds among the deaf, and I want you to help me in dispelling these ideas. . . ."

During the convention of the American Breeders' Association in Washington, in January, 1908, Dr. Bell delivered an address on "A Few Thoughts Concerning Eugenics,"[3] in which he said, in part:

DR. BELL'S REMARKS RELATING TO EUGENICS

"The subject you have entrusted to your Committee on Eugenics is of transcendent importance to mankind. It is no less a question than the consideration of whether it is possible to apply the principles of selective breeding to man for the benefit of the human race. If it is true that 'the proper study of man is man,' no higher or nobler subject of research can be found.

"I esteem it an honor to have been selected by you to serve on the committee having this matter in charge, and to be associated with the eminent men who compose the committee, under the leadership of Dr. David Starr Jordan, President of Leland Stanford University. President Jordan, as chairman, has already presented a preliminary report for the committee, which has met with the ready acceptance of all the members. . . . Thus" (by adopting the plan proposed) "not only would the proportion of superior offspring produced by the community as a whole be increased, but the level of superiority in the superior class would also be raised. There would thus be a general advance in the possession of desirable qualities all along the line, from the lowest to

[3] See Proceedings of the American Breeders' Association for 1908. The article was also published in the ASSOCIATION REVIEW, April, 1908, vol. x, pp. 166-173; also in the *National Geographic Magazine* at about the same time.

the highest. Is not this what we mean by improvement of the species?

"LEGISLATIVE RESTRICTIONS UPON MARRIAGE UNWISE

"This result, I am inclined to believe, would follow from the simple process of promoting the marriage of the superior with the superior without resort to legislative restrictions upon marriage to reduce the production of the inferior.

"Of course such restrictions should be considered, but the moment we propose to interfere with the liberty of marriage we tread upon dangerous ground. The institution of marriage not only provides for the production of offspring, but for the production of morality in the community at large. This is a powerful reason why we should not interfere with it any more than can possibly be helped. There are other reasons, however, arising from a consideration of the rights possessed by individuals in a free community.

"Among the inalienable rights recognized by the Declaration of Independence are 'life, liberty, and the pursuit of happiness.' The community has no right to interfere with the liberty of the individual and his pursuit of happiness in marriage unless the interests of the community are demonstrably endangered. The happiness of individuals is often promoted by marriage even in cases where the offspring may not be desirable.

"The production of undesirable children is, of course, an injury to the community, and there may perhaps be cases where legal checks may be justified; but it should not be lost sight of that there are other checks that are equally if not more efficient that can be brought into play.

"If the conditions that produce undesirable offspring could be authoritatively stated, prudential restraints are apt to arise in cases where defective offspring are likely to be produced.

"Where the general intelligence of the individuals concerned is at fault, or their duty to the community is not fully understood or realized, another check comes into play far more efficient than any legal restriction. Public opinion is a great compelling force and few there are who can resist it.

"Legal prohibition of marriage should only be resorted to in cases where there could be no manner of doubt that the community would suffer as a result of the marriage.

"Where doubt exists the community has no right to interfere with this most sacred and personal of all relations, and morality in the community would certainly be more promoted by affording the widest possible liberty of marriage than by restricting it.

"After all, the interests of the community are affected not so much by the fact of a marriage as by the production of undesirable offspring.

"The only reason why legislation against marriage should be considered at all, lies in the fact that we cannot well legislate against the production of offspring. Unfortunately prohibition of marriage does not necessarily prevent the production of offspring. It is surely advisable that the children born in a community should have legal fathers and mothers as much as possible.

"Public opinion and the desire of all persons to have healthy offspring would, in my judgment, be a more powerful deterrent to the production of undesirable offspring than a compulsory process of law.

THE MONTESSORI METHOD AGAIN

Editorial in *Mt. Airy World*

THE educational world in America is just now ringing with the name of Maria Montessori and we doubt if her methods will find any more enthusiastic supporters than the teachers of the deaf in those oral schools in which such strikingly similar lines of work have been developed during the past quarter of a century.

As we pointed out in a previous issue, sense-training exercises practically identical with those of Dr. Montessori are used in our best schools as a test of intelligence for entering pupils and continued as a means of developing it in those children whose response to the tests does not warrant their undertaking at once the difficult task of acquiring speech. The acquisition of speech by a deaf child is an infinitely more difficult task than any the normal child is ever confronted with, and the testimony of oral teachers as to the value of formal sense training in bringing pupils to the required state of mental development for this task is a striking corroboration of Dr. Montessori's theories.

Accustomed as we are to a wealth of equipment in our schools for the deaf, we marvel at the meagerness of her material. Where she has one piece of apparatus for a step of the work, we have several, and the steps themselves are, with us, far more numerous. In her study of form leading to writing and in her attempt to develop the sense of touch, she has apparently not found it necessary with hearing children to carry the work nearly so far as we do with the deaf.

We do not recall that the work in sense training, first used in America at the Clarke School, has been fully put before the profession, except at the meetings of the A. A. P. T. S. D. at Lake George and Northampton.* It

*While copies remain members may secure the reports of the respective Summer Meetings at 50 cents each, plus 9 cents per copy for postage. Members desiring this wealth of educational material should secure copies from the Volta Bureau while the opportunity is open, as in all probability none of the earlier reports will be reprinted.

is to be hoped that the authorities of the Clarke School will meet the present widespread interest in this branch of their work by giving, at the approaching Summer Meeting at Providence, a full account of their experiments along these lines. It would be well, also, if some authoritative outline of this work could be printed, making a volume that would naturally take its place beside Miss Yale's "Formation and Development of English Sounds" in the library of every teacher of beginning classes.

Another feature of the Montessori work to the value of which the teacher of the deaf can bear witness is the ease with which writing is acquired. Our teachers have never found it necessary to give any special attention to the teaching of writing, and our pupils write so well that their penmanship is always remarked upon by visitors. It is quite possible to pick out, by their writing alone, pupils who began their education in a school for the deaf and those who lost their hearing after spending some years in a public school. The explanation is simple. The sense-training work, undertaken primarily to develop the child to the point necessary to begin the complex coordinations employed in articulate speech, has given him in its earlier stages sufficient control of the hand to make writing an easy task.

But from the viewpoint of the oral teacher of the deaf the greatest good that the Montessori method can possibly accomplish for the educational system of our common schools would be the opening of the eyes of teachers of normal children to the fact, thus far only recognized by philologists, that all study of language should be based on phonetics. Educational leaders in America have for some years past been preaching the Montessori doctrine that education should make the evolution of the individual harmonize with that of humanity, but they have never applied their principle to language work. So far as she has developed her method of language teaching, Dr. Montessori seems to have proceeded according to sound principles, reviewing and correcting, first of all, the child's previous work in spoken language and proceeding to establish correct associations between its spoken and written forms. She spends no traditional four years in making the child record the written words of the language visually, but gives him the key and lets him invent reading and writing for himself. As an educational experience compare this with the mere memorizing of the "word" and "sentence methods" of teaching reading.

Some critics have called attention to the fact that Italian is a phonetic language, and that the number of sounds corresponds with the number of letters in the alphabet, while in English twenty-six characters have to represent forty or more sounds. It is to the everlasting glory of the Clarke School (for the deaf) that a method was there devised by which the phonetic values of the letters, especially the vowels, can be readily determined from their positions in words. The ease with which deaf children, less than a year in school, pronounce (of course with no idea of the meaning) long words and phrases is the marvel of every visitor. We remember having heard such a class read with great distinctness "The Mariposa Groves of Calaveras County."

ENTERTAINING THE DELEGATES

The afternoon program at the coming Summer Meeting of the American Association to Promote the Teaching of Speech to the Deaf, to be held at Providence, June 25 to July 2, contains a number of interesting and entertaining features, of which the following is a brief summary:

On Tuesday evening there will be a reception given by the Board of Trustees of the Rhode Island Institute, following the opening exercises.

On Wednesday afternoon a visit to the State House is planned, after which the party may separate into groups to take one of a number of short trips to nearby points of interest.

On Wednesday evening Prof. William MacDonald, of Brown University, will lecture on the New South.

On Thursday the Board of Trustees will invite the members of the Association to take a trip to Newport. Luncheon will be served on the boat and a supper served at Newport. The boat will pass the Atlantic squadron, which will be in Newport harbor at that time. A ride over the famous 10-mile drive at Newport will be taken, and the return on the boat will be made by moonlight.

On Friday the members of the Association will be invited to a Rhode Island clam-bake at Rocky Point, on Narragansett Bay, going either on boat or by cars.

On each of the other days trips are planned both by trolley and by automobile, as one pleases, to visit places of interest, including "Seeing Providence," the State armory, Roger Williams Park, Narragansett Pier, the Gorham silver manufacturing plant, a lace factory, the Brown University, the Hay Library, the School of Design, the Pendleton House, Browne and Sharpe's, the largest manufactory of tools in the world, and also one of the largest cotton mills in the country, situated on the site of the old Slater mill, the first cotton mill in America.

Accommodations for more than 100 delegates have already been reserved, and all desiring hotel or other accommodations should communicate without delay with Mr. Edwin G. Hurd, 520 Hope street, Providence, R. I.

What is the volume of work you actually do?

DEFECTIVE ORAL EXPRESSION

THE three following excerpts are lifted from the excellent report by the *Pennsylvania School Journal* of the proceedings of the Seventh Annual Session of the High School Department of the State Educational Association:

Oral Expression.—"We have in the past paid more attention to the cure than to the prevention of defective oral expression. You cannot have correct methods of oral expression in the high school unless these habits have been formed early in the grades. The little child must be trained in oral expression in the primary school. He must be encouraged to talk about something he knows—to tell some of his own experiences. He will then pass the point of self-consciousness without knowing it. Having aroused his interest, you will get a natural method of oral expression. Understanding must precede oral expression. A pupil cannot express what he does not understand. If you must omit either the reading or the understanding, by all means omit the reading. Help the pupil to grasp the meaning—to make it his own. If you do this, he will give it force and correct expression. Another important point is that pupils must hear good reading—not too much of it, but enough to fix their ideas and ideals, although not with the idea of imitating it. Lead the child to see what a paragraph or a story means and he will give it—not forcibly, perhaps, for immature minds cannot grasp meanings as do those more mature; but if it appeals to his emotions, if he looks with joy or sorrow upon it, if it expresses his own personality, he will be able to give it oral expression in a manner that will be both pleasing and enlightening. The secret of success in teaching oral expression is our ability to get the child to make his own thought to be expressed."—Miss Mary Whitson, Philadelphia.

Vocal Expression.—"Not only our teachers of English, but every teacher should be skilled in vocal expression. Few teachers at the present time are qualified to read well. How often we hear teachers reading in a high key and in a complaining tone that is enough to set on edge the nerves of any sensitive child. The solution of this question must come back to the preparation of all teachers. We must begin in the primary grades to train for oral expression. The high school cannot overcome habits of early training. Few public speakers manage the voice properly, and this is becoming more noticeable every year—and America has fewer great orators today than ever before. The tendency today is toward a business-like mode of public expression. The flowers of speech are being laid aside; but some essential elements of oral expression are absolutely neglected. One of these is distinctness. Even Phillips Brooks, great preacher that he was, did not speak distinctly. Upon one occasion when listening to him, I lost fully half of all he said because of his rapidity of speech and indistinct enunciation. What was the secret of the ability of Edward Everett to hold the attention of an audience for two hours or more, or of Wendell Phillips to sway vast audiences, or of Edmund Burke to make men think as he thought? It was not alone their learning or their logic, but it was largely their mastery of oral expression, guided by careful cultivation and extensive practise in solitude as well as on the platform. William J. Bryan is the only orator of the present day who is comparable with these men in this respect. I have heard him in vast auditoriums, where every person could hear and understand all he said. In order to cultivate oral expression among pupils, the teacher should have the power of expressive reading and should do much reading of fine literature. In this way he can do much to arouse the interest of pupils and secure from them intelligent effort in mastering the subject of oral expression."—Prof. W. D. Sheldon, Girard College.

Out-of-School Environment.—"The care and training of children is not so simple a matter as some used to think. More and more do we realize that the child is an exceedingly complex being, living in an exceedingly complex environment. To properly teach, control, and train this child is a most difficult art and requires the most careful preparation. How easy to fall short of producing an efficient character! How easily harm may be done! No one should be allowed to go into child-training unless specially qualified. If one were called upon to run an intricate machine, he would refuse to touch it until he had mastered its details and been shown how to start, stop, repair, and clean it. But child nature is more intricate than any machine that can ever be devised. The causes of a child's deeds, the roots of his ideas, the tendencies of his disposition are far removed from view. Far more essential is it for a parent or teacher to understand the child than for the operator to understand his machine.

Few of the children we teach are well known to us, yet on our ability to adjust our efforts to their needs will depend to some extent their physical, mental, and moral welfare. Teachers must be constantly asking such questions as these: What are this pupil's greatest needs? Are these needs administered to by this school? What are this pupil's greatest possibilities? Is the school enabling him to realize them? Yet how can we give intelligent answers to these questions unless we know the pupil well? We must realize that positive injury may attend the school life of misunderstood children and of children whose out-of-school life is not known, and that many do not reach the possibilities of which they are capable because more is not known of their

individual characteristics and needs. How can we warn effectively? How can we effectively teach the consequences of wrong-doing? How can we give positive instruction and training in right thinking and doing if we do not know the nature of a child's life out of school? The knowledge a teacher gains of a child's nature and needs by merely seeing him in school is very one-sided and inadequate. The teacher must see the child as the parents see him, as his former teachers know him, as other people know him, as he himself reveals himself through his out-of-school activities. Only a part of the real boy is at school, and that part is usually a very small one."—Dr. Myron T. Scudder, Principal of Froebel Collegiate and Normal Institute, New York.

MICHIGAN SCHOOL BURNED

THE State School for the Deaf, at Flint, was destroyed by fire Wednesday morning, May 22. The press reports state that a bolt of lightning struck the cupola of the administration building during a heavy storm, and probably ignited the building, as flames were discovered about 1:45 a. m. by the night watchman, who notified the supervisors, and they awakened the teachers and pupils, all escaping from the burning building. Many carried their clothing, and dressed in the superintendent's cottage. The administration and main buildings, built in 1856, are a total loss, estimated at $400,000, as the State carries no insurance. As there were more than 300 pupils present, the fact that not a life was lost, and no injuries sustained by pupils or teachers, though the fire occurred shortly after midnight, is a fine testimonial to the excellent discipline maintained in the school.

The press dispatch reads: "At noon today Dr. F. D. Clarke, superintendent of the school for the deaf, stated that the roll had been called three times during the morning, and that every pupil had answered or been accounted for. 'That is the one great consolation,' said Dr. Clarke, 'that no lives were lost in the fire. I personally went through every room where there had been children asleep, after the building was supposedly clear, to see that no one had by any chance been left behind. There seems to be no doubt but that the fire was caused by the lightning. The building was not a modern one, and the fourth floor, which was unoccupied, had never been wired for electricity. It was used as a store-room for stage properties used in amateur theatrical productions.' Dr. Clarke led the work of rescue and seemed to be everywhere at one time. He hurried through the halls and dormitories and personally saw that every one of the children under his care were out of the buildings. Miss Gertrude Hyde, a nurse in the hospital ward and one of the oldest employees, was one of the heroines of the fire. Others who did noble work in saving the children were N. M. Johnson, head supervisor; Herbert McClennan, assistant supervisor, and Miss Florence Jones, head supervisor in the girls' dormitory.

"By a splendid system, arranged for just such emergencies, the supervisors were ably assisted by the older boys and girls. There are a number of heads appointed among the boys and girls, and under them are a series of subheads, each with a particular duty to attend to in the work of clearing the buildings in case of fire. The assistants responded nobly and their cool-headed work prevented any disorder, which would have led unquestionably to a serious loss of life."

NATIONAL EDUCATION ASSOCIATION

The Fiftieth Annual Convention of the National Education Association will be held in the Auditorium, in Chicago, July 6 to 12, inclusive. The Department of Special Education, of which Prof. John W. Jones, Superintendent of the State School for the Deaf at Columbus, Ohio, is president, will hold its sessions on Tuesday, Wednesday, and Thursday, July 9, 10, and 11. The program for this department reads as follows:

TUESDAY AFTERNOON, JULY 9—2:30 O'CLOCK

Address—E. J. Emerick, Superintendent of School for Feeble-minded Youth, Columbus, Ohio.

Training of Feeble-minded Deaf, Based upon Impressions Gained Abroad—Frances Wettstein, School for the Deaf, Milwaukee, Wis.

The Training of Native Impulses—Hermann Charles Henderson, teacher of psychology and pedagogy in State Normal School, Milwaukee, Wis.

The Chicago Oral School for the Deaf, under Miss Mary McCowen, will give a living exhibition of its method of instructing deaf children.

WEDNESDAY FORENOON, JULY 10—9:00 O'CLOCK

Round Table Conference (program to be supplied).

THURSDAY AFTERNOON, JULY 11—2:30 O'CLOCK

The Possibilities and Limitations of the Deaf Mind—Elmer W. Walker, Superintendent of State School for the Deaf, Delavan, Wis.

Some Features in the Education of the Blind—John B. Curtis, Superintendent of Day School for the Blind, Chicago, Ill.

NOTICE TO TEACHERS.—The Volta Bureau charges nothing for its services as an agency for teachers of the deaf, but does insist that all teachers registered with the Bureau shall give immediate notice when they have accepted positions, regardless of the means by which the position is secured. Teachers who fail to give such notice may not thereafter avail themselves of the services of the Volta Bureau.